

COMPAL CONFIDENTIAL

MODEL NAME : CDP80/CDP81

PCB NO : LA-E152P

BOM P/N :

GPIO MAP: Dell GPIO map EC16 062416 Compal Only

Breckenridge 15 DSC (TBT)

Kabylake H

2016-11-10

REV : 1.0 (A00)

@ : Nopop Component

N16@ : N16S-GT1-KA Component

N17@ : N17M-Q3 Component

EMI@ : EMI Component

@EMI@ : EMI Nopop Component

ESD@ : ESD Component

@ESD@ : ESD Nopop Component

RF@ : RF Component

@RF@ : RF Nopop Component

XDP@ : XDP Component

CONN@ : Connector Component

eSPI@ : eSPI interface

LPC@ : LPC interface

MB PCB

Part Number	Description
DAA000CP010	PCB 1SE LA-E152P REV1 MB DSC AR 1

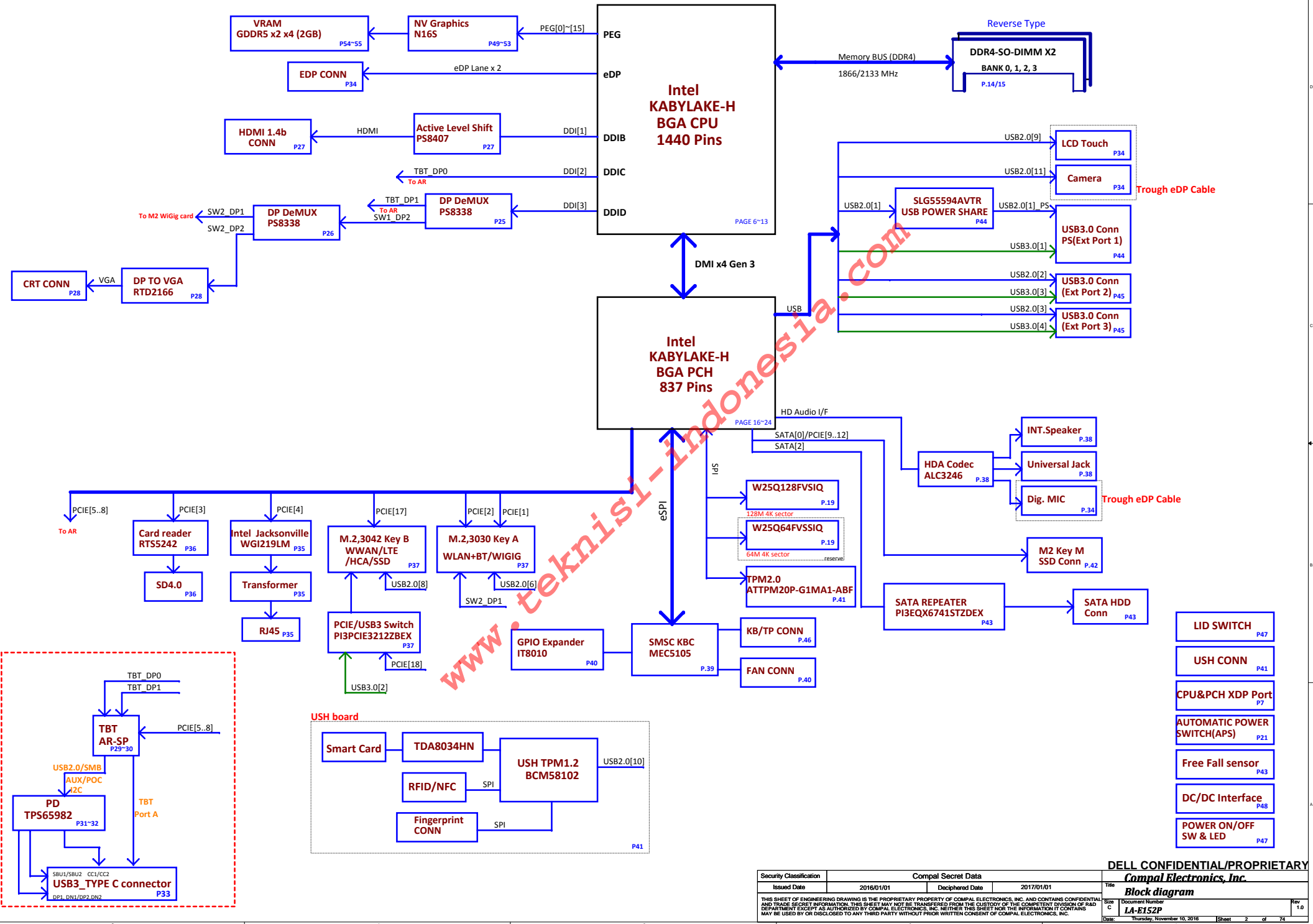
Layout Dell logo

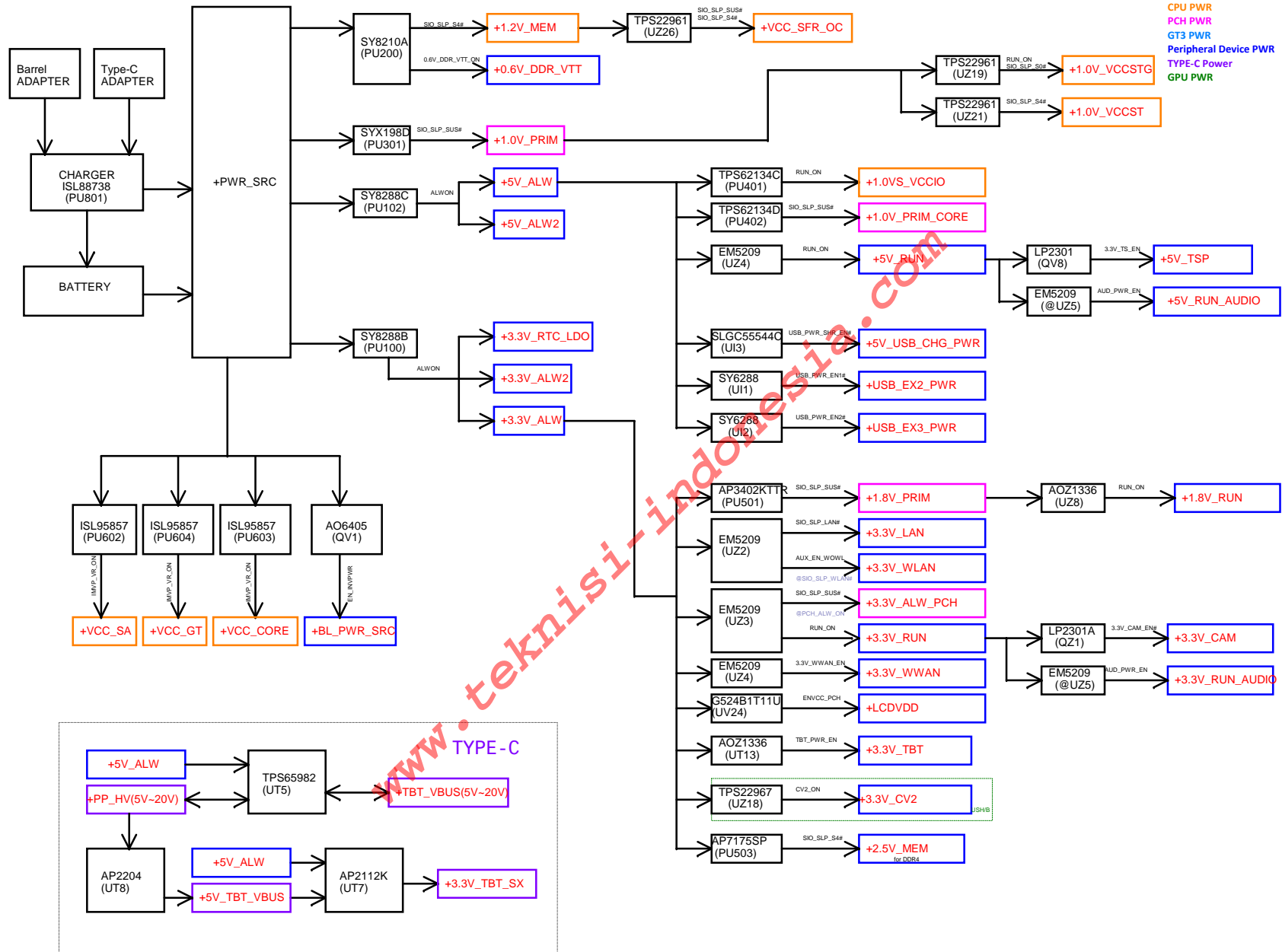


COPYRIGHT 2016
ALL RIGHT RESERVED
REV: A00
PWB: DNY4D

Security Classification				Compal Secret Data				DELL CONFIDENTIAL/PROPRIETARY			
Issued Date				2016/01/01				Compal Electronics, Inc.			
Deciphered Date				2017/01/01				Cover Sheet			
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.				Title				Size A			
								Document Number			
								LA-E152P			
								Date: Thursday, November 10, 2016			
								Sheet 1 of 74			
								Rev 1.0			

Breckenridge 15 DSC TBT Block Diagram





PEG_CRX_GTX_P[0..15] << PEG_CRX_GTX_P[0..15] <49>
PEG_CRX_GTX_N[0..15] << PEG_CRX_GTX_N[0..15] <49>
PEG_CTX_C_GRX_P[0..15] >> PEG_CTX_C_GRX_P[0..15] <49>
PEG_CTX_C_GRX_N[0..15] >> PEG_CTX_C_GRX_N[0..15] <49>

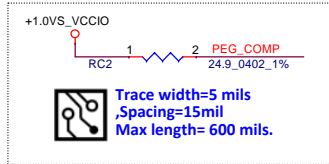
UC1C SKYLAKE_HALO Rev.1.0

PEG_CRX_GTX_P15	E25	PEG_RXP[0]	PEG_TXP[0]	B25	PEG_CTX_GRX_P15	CC34	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P15
PEG_CRX_GTX_N15	D25	PEG_RXN[0]	PEG_TXN[0]	A25	PEG_CTX_GRX_N15	CC35	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N15
PEG_CRX_GTX_P14	E24	PEG_RXP[1]	PEG_TXP[1]	B24	PEG_CTX_GRX_P14	CC36	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P14
PEG_CRX_GTX_N14	F24	PEG_RXN[1]	PEG_TXN[1]	C24	PEG_CTX_GRX_N14	CC37	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N14
PEG_CRX_GTX_P13	E23	PEG_RXP[2]	PEG_TXP[2]	B23	PEG_CTX_GRX_P13	CC38	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P13
PEG_CRX_GTX_N13	D23	PEG_RXN[2]	PEG_TXN[2]	A23	PEG_CTX_GRX_N13	CC39	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N13
PEG_CRX_GTX_P12	E22	PEG_RXP[3]	PEG_TXP[3]	B22	PEG_CTX_GRX_P12	CC40	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P12
PEG_CRX_GTX_N12	F22	PEG_RXN[3]	PEG_TXN[3]	C22	PEG_CTX_GRX_N12	CC41	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N12
PEG_CRX_GTX_P11	E21	PEG_RXP[4]	PEG_TXP[4]	B21	PEG_CTX_GRX_P11	CC42	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P11
PEG_CRX_GTX_N11	D21	PEG_RXN[4]	PEG_TXN[4]	A21	PEG_CTX_GRX_N11	CC43	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N11
PEG_CRX_GTX_P10	E20	PEG_RXP[5]	PEG_TXP[5]	B20	PEG_CTX_GRX_P10	CC44	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P10
PEG_CRX_GTX_N10	F20	PEG_RXN[5]	PEG_TXN[5]	C20	PEG_CTX_GRX_N10	CC45	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N10
PEG_CRX_GTX_P9	E19	PEG_RXP[6]	PEG_TXP[6]	B19	PEG_CTX_GRX_P9	CC46	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P9
PEG_CRX_GTX_N9	D19	PEG_RXN[6]	PEG_TXN[6]	A19	PEG_CTX_GRX_N9	CC47	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N9
PEG_CRX_GTX_P8	E18	PEG_RXP[7]	PEG_TXP[7]	B18	PEG_CTX_GRX_P8	CC48	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P8
PEG_CRX_GTX_N8	F18	PEG_RXN[7]	PEG_TXN[7]	C18	PEG_CTX_GRX_N8	CC49	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N8
PEG_CRX_GTX_P7	D17	PEG_RXP[8]	PEG_TXP[8]	A17	PEG_CTX_GRX_P7	CC50	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P7
PEG_CRX_GTX_N7	E17	PEG_RXN[8]	PEG_TXN[8]	B17	PEG_CTX_GRX_N7	CC51	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N7
PEG_CRX_GTX_P6	F16	PEG_RXP[9]	PEG_TXP[9]	C16	PEG_CTX_GRX_P6	CC52	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P6
PEG_CRX_GTX_N6	E16	PEG_RXN[9]	PEG_TXN[9]	B16	PEG_CTX_GRX_N6	CC53	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N6
PEG_CRX_GTX_P5	D15	PEG_RXP[10]	PEG_TXP[10]	A15	PEG_CTX_GRX_P5	CC54	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P5
PEG_CRX_GTX_N5	E15	PEG_RXN[10]	PEG_TXN[10]	B15	PEG_CTX_GRX_N5	CC55	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N5
PEG_CRX_GTX_P4	F14	PEG_RXP[11]	PEG_TXP[11]	C14	PEG_CTX_GRX_P4	CC56	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P4
PEG_CRX_GTX_N4	E14	PEG_RXN[11]	PEG_TXN[11]	B14	PEG_CTX_GRX_N4	CC57	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N4
PEG_CRX_GTX_P3	D13	PEG_RXP[12]	PEG_TXP[12]	A13	PEG_CTX_GRX_P3	CC58	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P3
PEG_CRX_GTX_N3	E13	PEG_RXN[12]	PEG_TXN[12]	B13	PEG_CTX_GRX_N3	CC59	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N3
PEG_CRX_GTX_P2	F12	PEG_RXP[13]	PEG_TXP[13]	C12	PEG_CTX_GRX_P2	CC60	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P2
PEG_CRX_GTX_N2	E12	PEG_RXN[13]	PEG_TXN[13]	B12	PEG_CTX_GRX_N2	CC61	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N2
PEG_CRX_GTX_P1	D11	PEG_RXP[14]	PEG_TXP[14]	A11	PEG_CTX_GRX_P1	CC62	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P1
PEG_CRX_GTX_N1	E11	PEG_RXN[14]	PEG_TXN[14]	B11	PEG_CTX_GRX_N1	CC63	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N1
PEG_CRX_GTX_P0	F10	PEG_RXP[15]	PEG_TXP[15]	C10	PEG_CTX_GRX_P0	CC64	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_P0
PEG_CRX_GTX_N0	E10	PEG_RXN[15]	PEG_TXN[15]	B10	PEG_CTX_GRX_N0	CC65	1	2	0.22U	0402	16V7K	PEG_CTX_C_GRX_N0
PEG_COMP	G2	PEG_RCOMP										

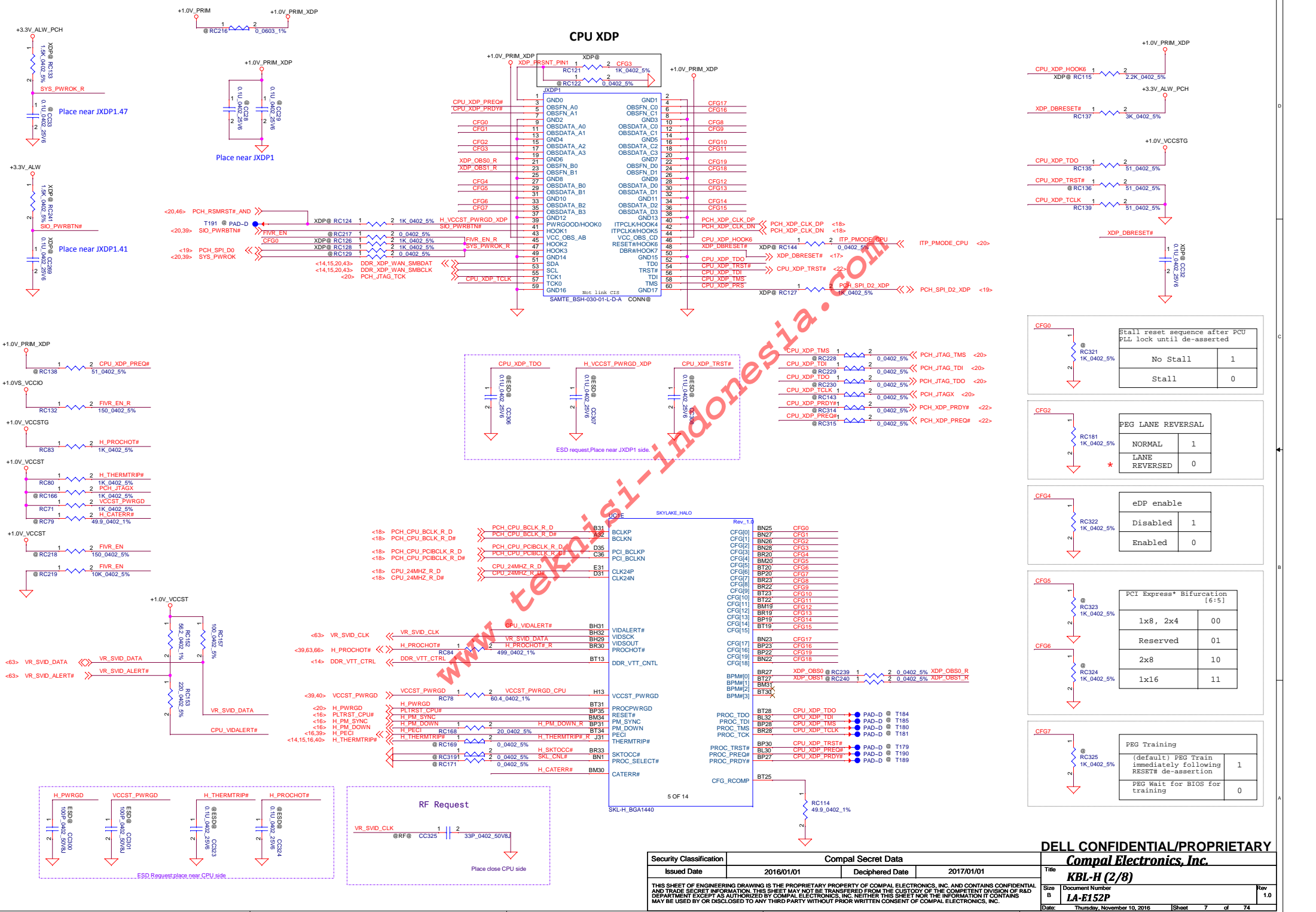
<17> DMI_CRX_PTX_P0 >> DMI_CRX_PTX_P0	D8	DMI_RXP[0]	DMI_TXP[0]	B8	DMI_CTX_PRX_P0 >> DMI_CTX_PRX_P0	<17>
<17> DMI_CRX_PTX_N0 >> DMI_CRX_PTX_N0	E8	DMI_RXN[0]	DMI_TXN[0]	A8	DMI_CTX_PRX_N0 >> DMI_CTX_PRX_N0	<17>
<17> DMI_CRX_PTX_P1 >> DMI_CRX_PTX_P1	F8	DMI_RXP[1]	DMI_TXP[1]	C6	DMI_CTX_PRX_P1 >> DMI_CTX_PRX_P1	<17>
<17> DMI_CRX_PTX_N1 >> DMI_CRX_PTX_N1	E6	DMI_RXN[1]	DMI_TXN[1]	B6	DMI_CTX_PRX_N1 >> DMI_CTX_PRX_N1	<17>
<17> DMI_CRX_PTX_P2 >> DMI_CRX_PTX_P2	D5	DMI_RXP[2]	DMI_TXP[2]	B5	DMI_CTX_PRX_P2 >> DMI_CTX_PRX_P2	<17>
<17> DMI_CRX_PTX_N2 >> DMI_CRX_PTX_N2	E5	DMI_RXN[2]	DMI_TXN[2]	A5	DMI_CTX_PRX_N2 >> DMI_CTX_PRX_N2	<17>
<17> DMI_CRX_PTX_P3 >> DMI_CRX_PTX_P3	J8	DMI_RXP[3]	DMI_TXP[3]	D4	DMI_CTX_PRX_P3 >> DMI_CTX_PRX_P3	<17>
<17> DMI_CRX_PTX_N3 >> DMI_CRX_PTX_N3	J9	DMI_RXN[3]	DMI_TXN[3]	B4	DMI_CTX_PRX_N3 >> DMI_CTX_PRX_N3	<17>

3 OF 14

SKL-H_BGA1440



Security Classification				Compal Secret Data				DELL CONFIDENTIAL/PROPRIETARY			
Issued Date				2016/01/01		Deciphered Date		2017/01/01		Title	
										Compal Electronics, Inc.	
										KBL-H (1/8)	
										Size A	
										Document Number	
										LA-E152P	
										Date:	
										Thursday, November 10, 2016	
										Sheet 6 of 74	
										Rev 1.0	



Security Classification	Compal Secret Data		
Issued Date	2016/01/01	Deciphered Date	2017/01/01
<p>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 TO ANY OTHER DIVISION OR EXTERNAL PARTY WITHOUT THE WRITTEN PERMISSION OF THE COMPETENT DIVISION OF R&D. NO PART OF THIS SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF COMPAL ELECTRONICS, INC.</p>			

HDMI

AR P0

AR P1 , WIGIG , VGA

UC1D

SKYLAKE_HALO

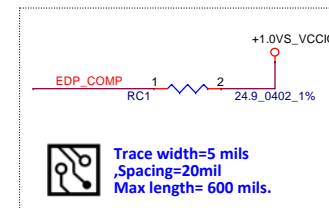
Rev. 1.4

SKL-H_BGA1440

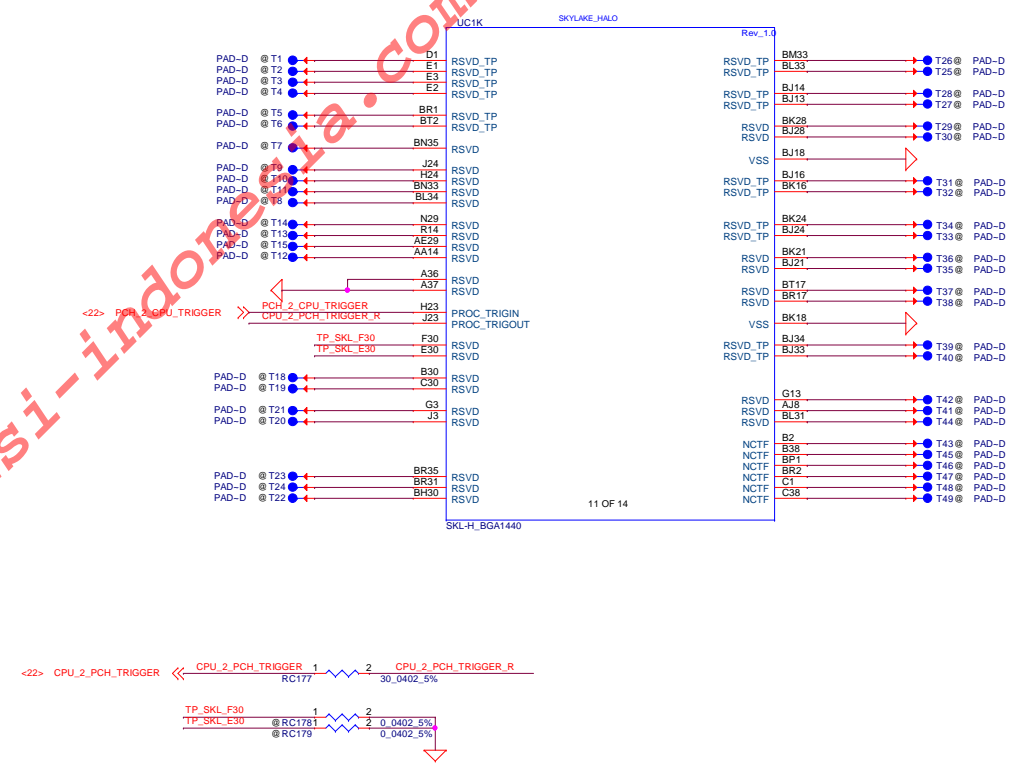
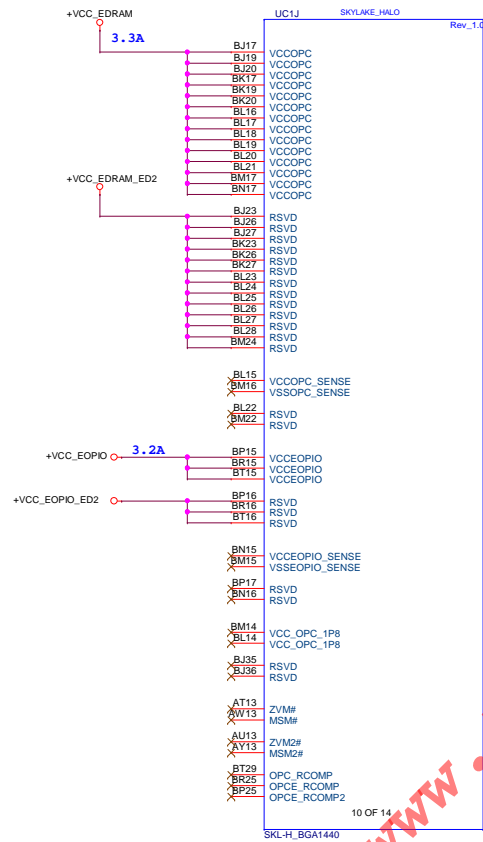
EDP_DISP_UTIL

EDP_RCOMP

AUD_AZACPU_SDI 1 RC66 2AUD_AZACPU_SDI_R 20_0402_5% AUD_AZACPU_SDI_R <20>

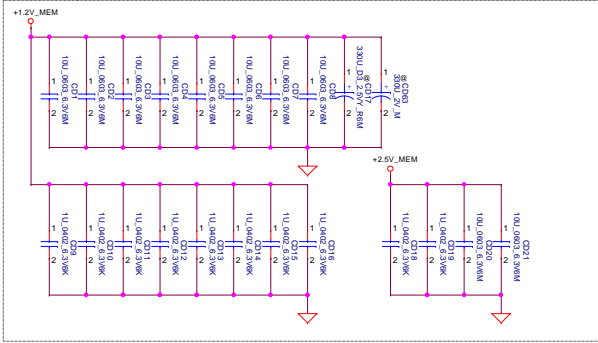


Security Classification				Compal Secret Data				DELL CONFIDENTIAL/PROPRIETARY			
Issued Date				2016/01/01		Deciphered Date		2017/01/01		Title	
										KBL-H (4/8)	
										Document Number	
										LA-E152P	
										Date	
										Thursday, November 10, 2016	
										Sheet 9 of 74	
										Rev 1.0	

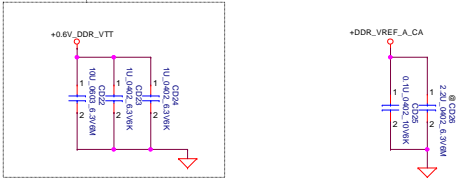


 DDR_A_C80..71
 DDR_A_DQS#0..8
 DDR_A_DQS#0..8
 DDR_A_D0..15
 DDR_A_D16..31
 DDR_A_D32..47
 DDR_A_D48..63
 DDR_A_MA0..16

Layout Note:
Place near JDIMM1



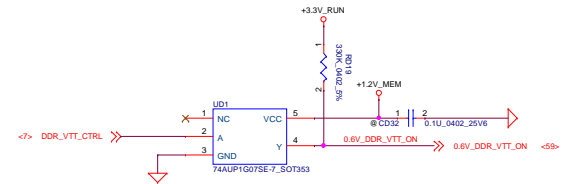
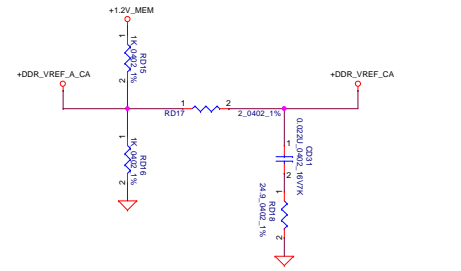
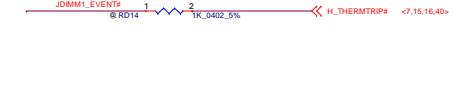
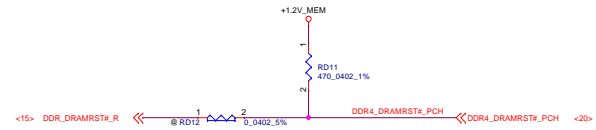
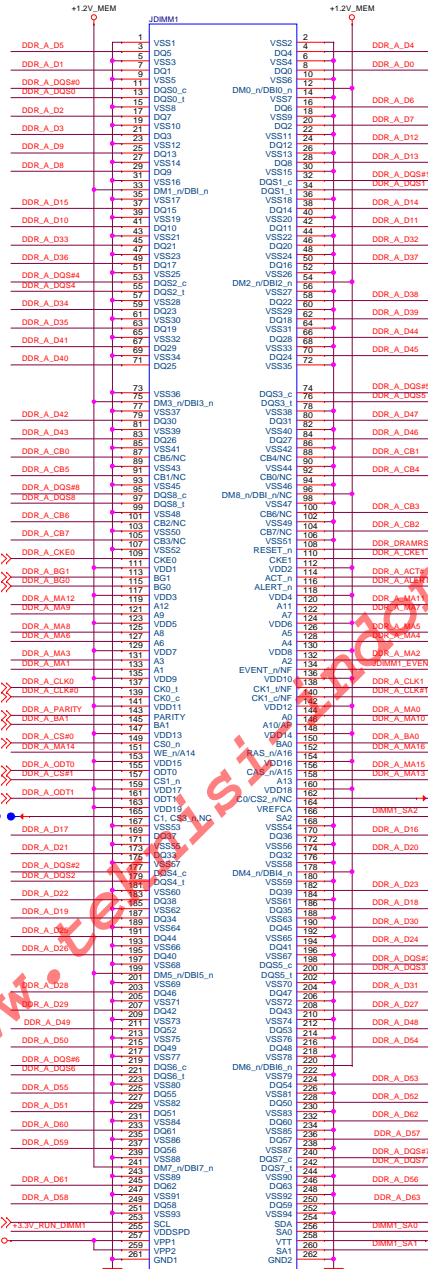
Layout Note:
Place near JDIMM1.258



DIMM Select

	SA0	SA1	SA2
* DIMM1	0	0	0
DIMM2	1	0	0
DIMM3	0	1	0
DIMM4	1	1	0

Byte[0]	DQ[7:0]	DQS/DQS#[0]
Byte[1]	DQ[15:8]	DQS/DQS#[1]
Byte[2]	DQ[23:16]	DQS/DQS#[2]
* Byte[3]	DQ[31:24]	DQS/DQS#[3]
Byte[4]	DQ[39:32]	DQS/DQS#[4]
* Byte[5]	DQ[47:40]	DQS/DQS#[5]
Byte[6]	DQ[55:48]	DQS/DQS#[6]
Byte[7]	DQ[63:56]	DQS/DQS#[7]

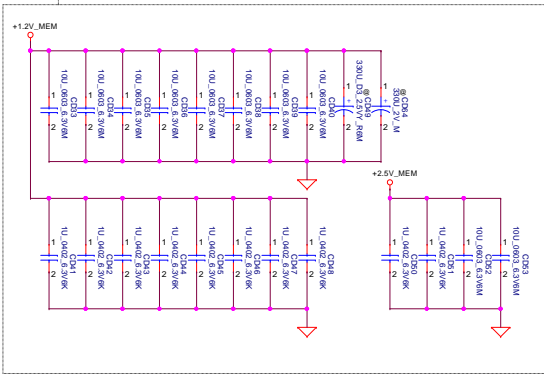


DELL CONFIDENTIAL/PROPRIETARY
 Compal Electronics, Inc.
 DDR4-SODIMM SLOT1

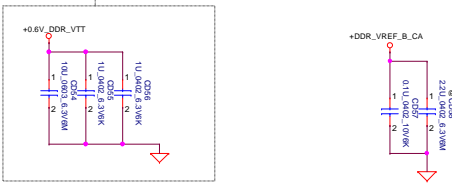
Security Classification	Compal Secret Data
Issued Date	2016/01/01
Deciphered Date	2017/01/01
Document Number	LA-E152P
Date	Thursday, November 10, 2016
Sheet	14 of 74

<> DDR_B_CB0..7
<> DDR_B_DQS0..8
<> DDR_B_DQS0..8
<> DDR_B_D16..31
<> DDR_B_D32..47
<> DDR_B_D48..63
<> DDR_B_MA0..16

Layout Note:
Place near J1MM2

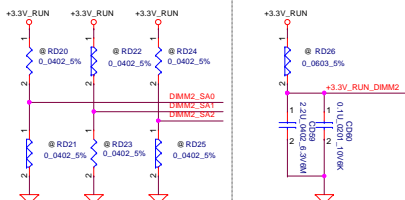


Layout Note:
Place near J1MM2.258



DIMM Select

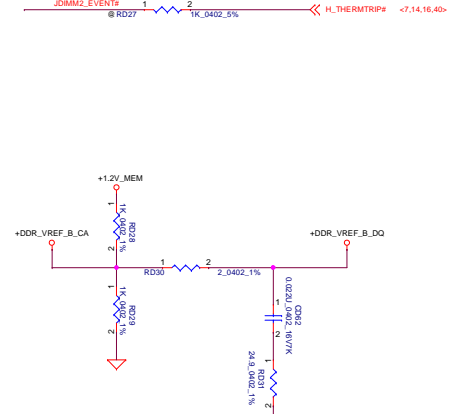
	SA0	SA1	SA2
DIMM1	0	0	0
DIMM2	1	0	0
DIMM3	0	1	0
DIMM4	1	1	0



Byte[0]	DQ[7:0]	DQS/DQS#[0]
Byte[1]	DQ[15:8]	DQS/DQS#[1]
Byte[2]	DQ[23:16]	DQS/DQS#[2]
Byte[3]	DQ[31:24]	DQS/DQS#[3]
Byte[4]	DQ[39:32]	DQS/DQS#[4]
Byte[5]	DQ[47:40]	DQS/DQS#[5]
Byte[6]	DQ[55:48]	DQS/DQS#[6]
Byte[7]	DQ[63:56]	DQS/DQS#[7]

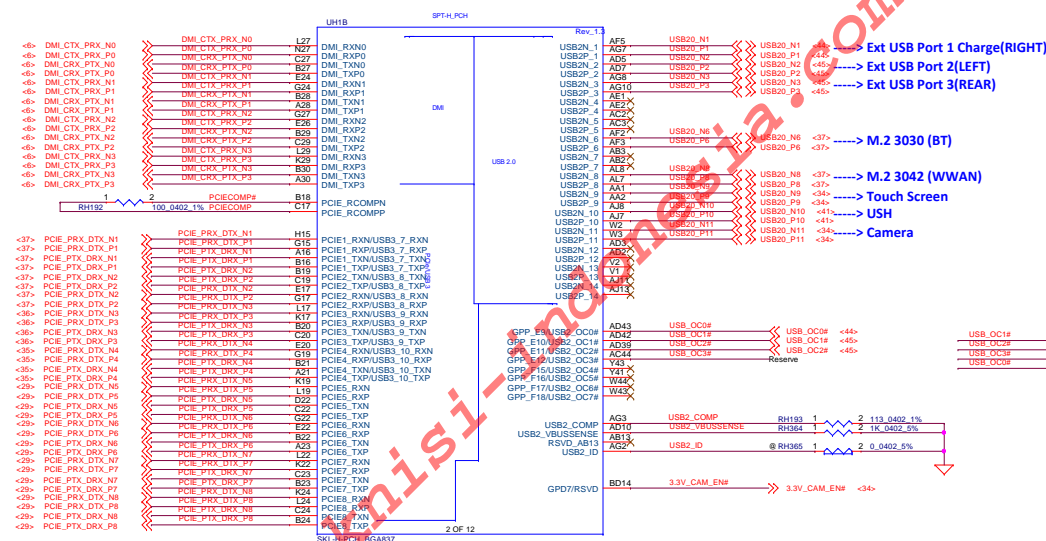


www.telusintelsia.com

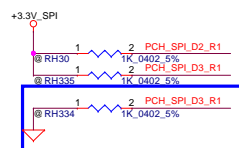
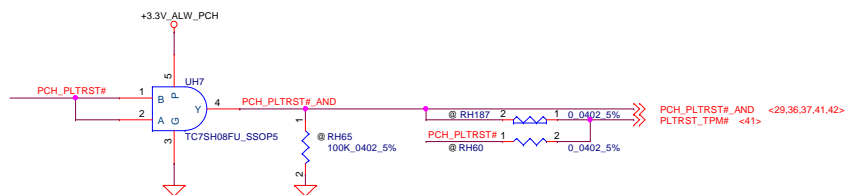


DELL CONFIDENTIAL/PROPRIETARY

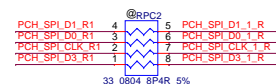
Security Classification	Compal Secret Data		Title	
Issued Date	2016/01/01	Deciphered Date	2017/01/01	Compal Electronics, Inc.
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED 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
				LA-E152P
				Date: Thursday, November 10, 2016
				Sheet 16 of 74



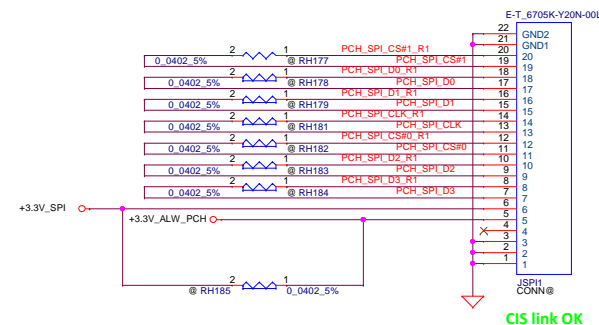
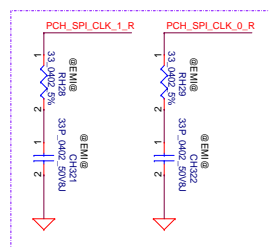
Size	Document Number	Rev
C	LA-E152P	1.0
Date:	Thursday, November 10, 2016	Sheet 17 of 74

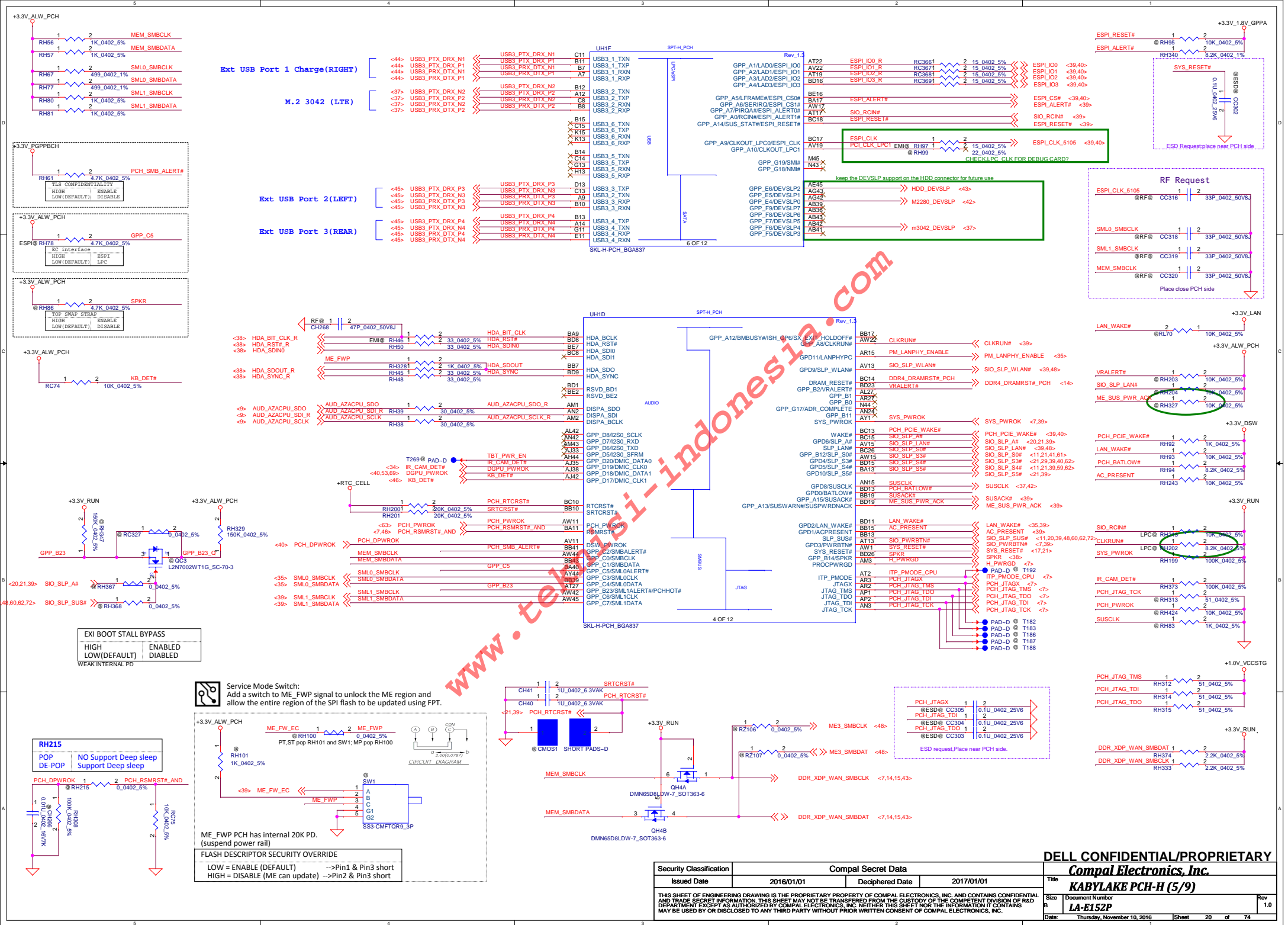


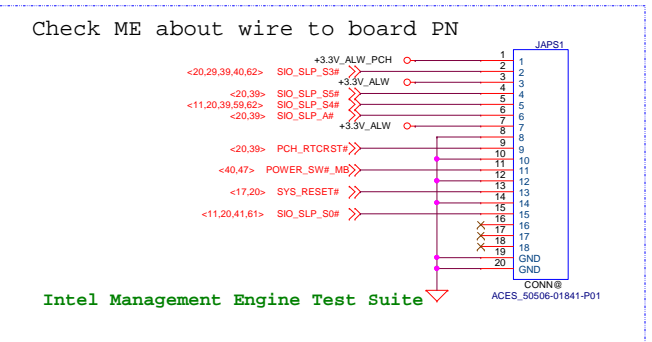
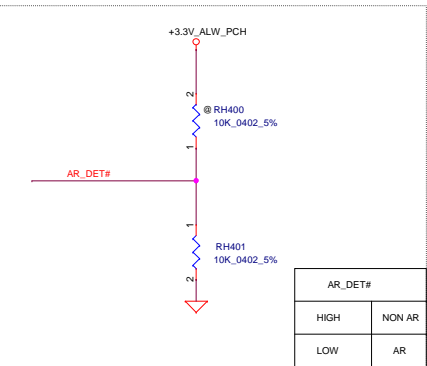
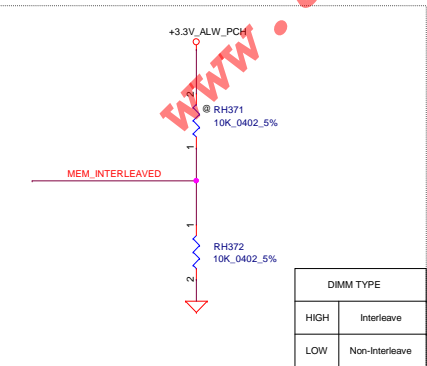
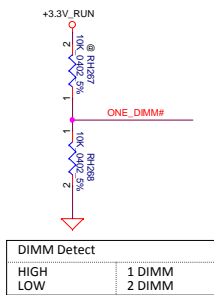
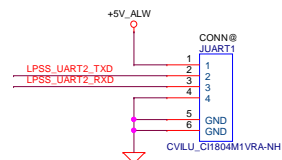
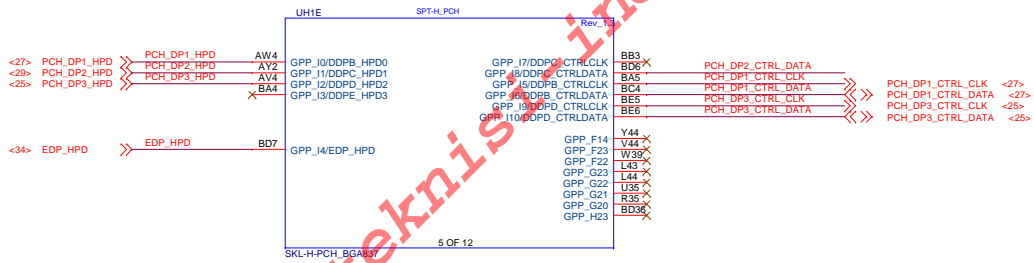
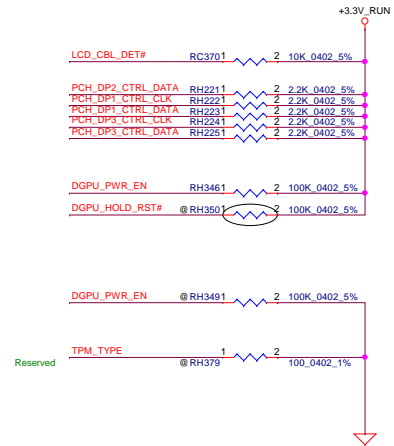
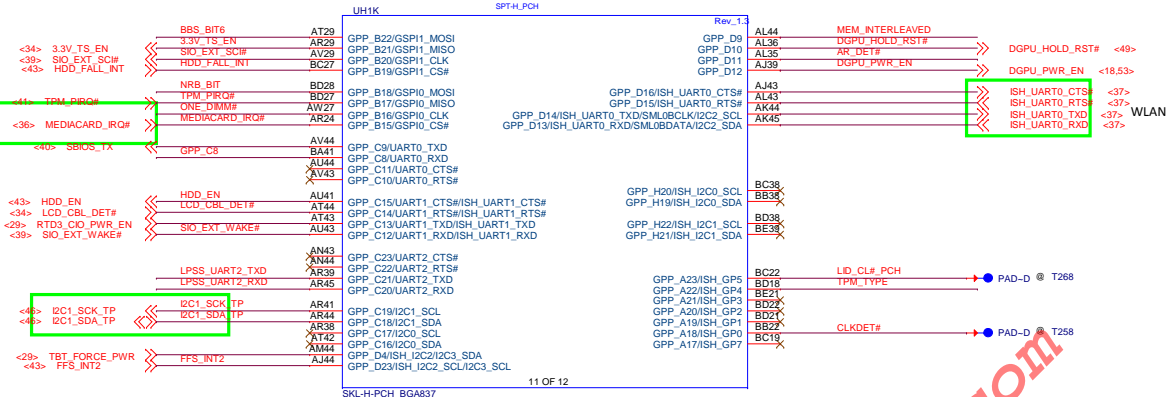
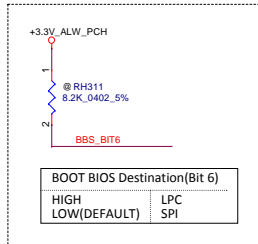
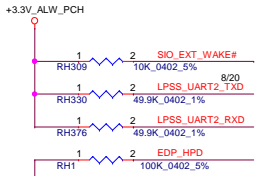
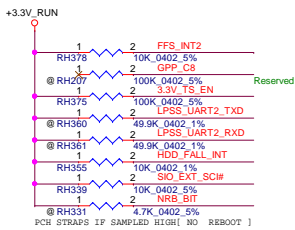
Note that the pull down resistor on SPI0_IO3 is only needed for SKL U/Y platforms with FS_ and SKL S/H platforms with pre-FS1/FS1 samples.

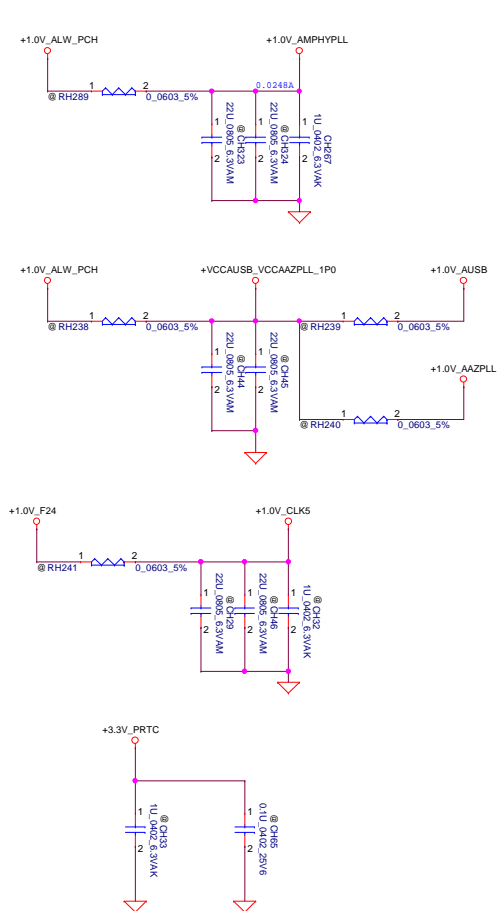


Need check



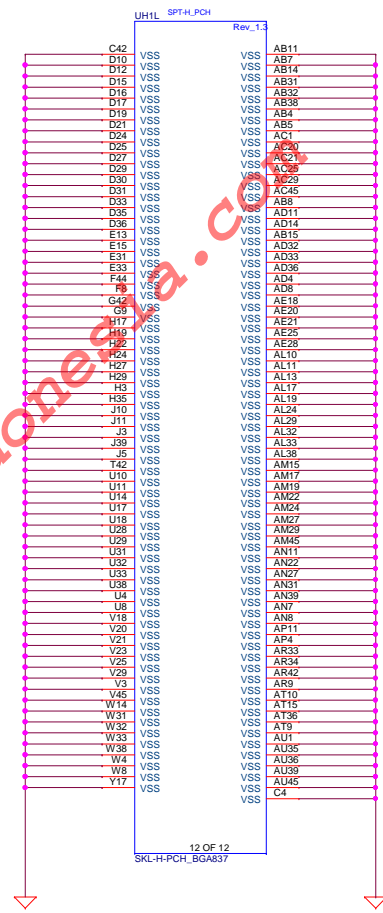
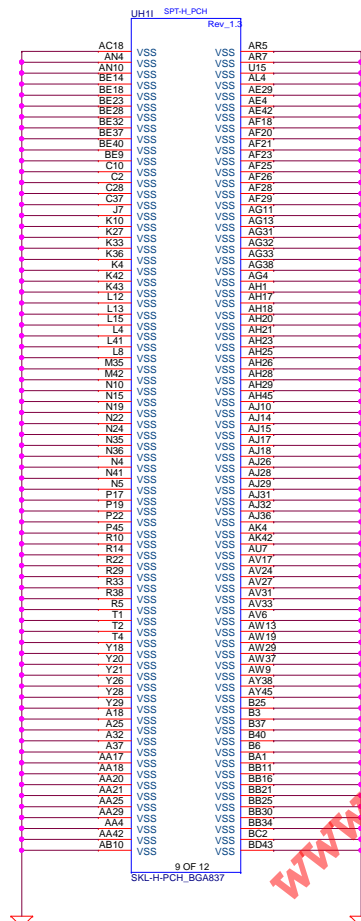


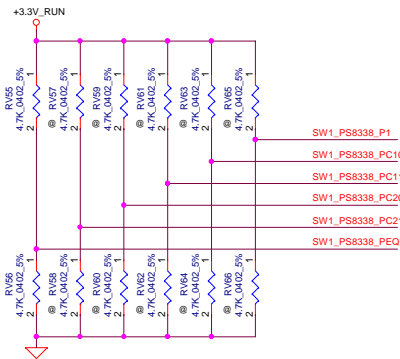
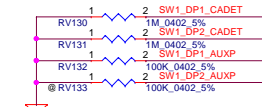
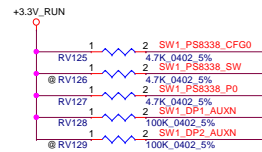




www.teknisi-indonesia.com

Security Classification		Compal Secret Data	
Issued Date	2016/01/01	Deciphered Date	2017/01/01
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.			
Title		DELL CONFIDENTIAL/PROPRIETARY Compal Electronics, Inc. KABYLAK PCH-H (8/9)	
Size	B	Document Number	LA-E152P
Date	Thursday, November 10, 2016	Sheet	23 of 74
Rev	1.0		



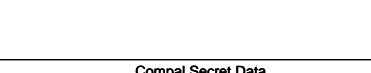
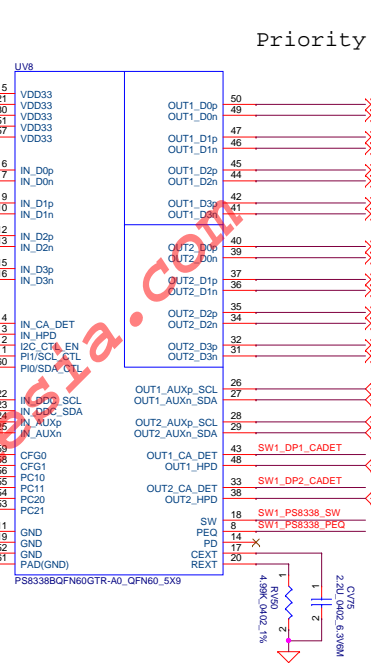
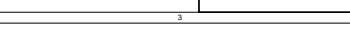
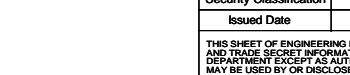
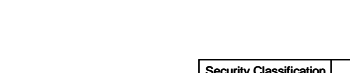
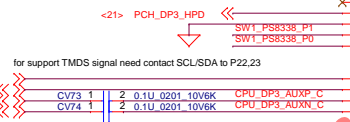
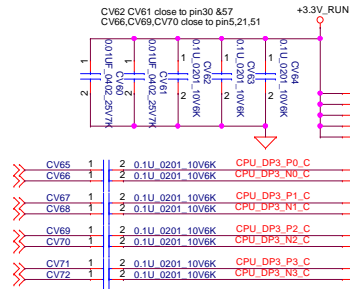


Port switching control or priority configuration. Internal pull down -150K Ω , 3.3V I/O
 For Control Switching Mode (CFG0 = L):
 SW = L: Port1 is selected (default)
 SW = H: Port2 is selected
 For Automatic Switching Mode (CFG0 = H):
 SW = L: Port1 has higher priority when both ports are plugged (default)
 SW = H: Port2 has higher priority when both ports are plugged

Vendor suggest MUX use LLEQ, PEQ-M and P10-H !!

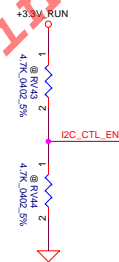
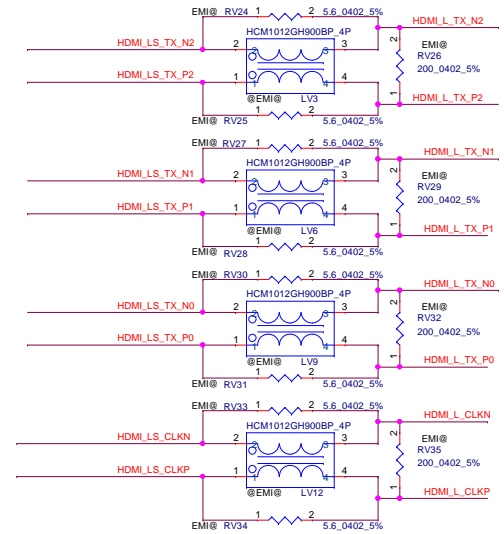
Programmable input equalization levels, Internal pull down at -150Kohm, 3.3V I/O
 PEQ =
 L: default, LEQ, compensate channel loss up to 11.5dB @HBR2
 H: HEQ, compensate channel loss up to 14.5dB @HBR2
 M: LLEQ, compensate channel loss up to 8.5dB @HBR2

P10: Automatic EQ disable, Internal pull down -150K ohm, 3.3V I/O
 P10 = L: Automatic EQ enable (default)
 H: Automatic EQ disable





FAL ID	Title DP SW2 PS8338		
	Size B	Document Number LA-E152P	Rev 1.0
	Date: Thursday, November 10, 2016 Sheet 26 of 74		

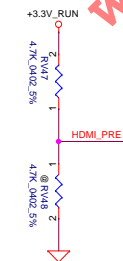


I2C Control enable. Internal pull down at 150k 3.3V I/O

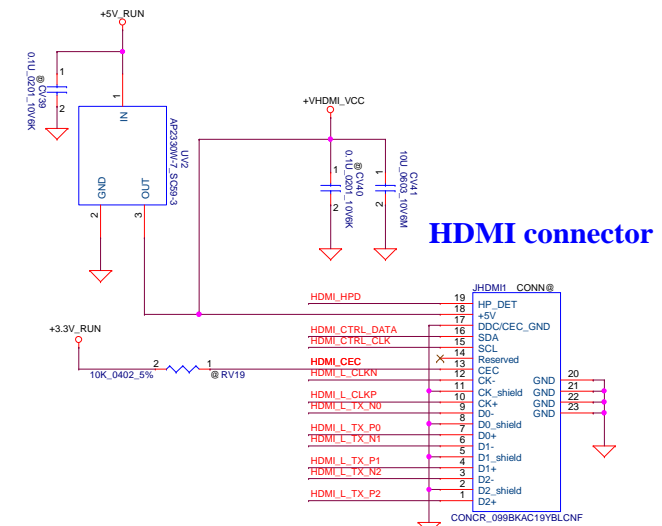
L: Pin control is selected with auto jitter cleaning (default)

H: I2C control is selected with default I2C address

M: Pin control is selected with full jitter cleaning



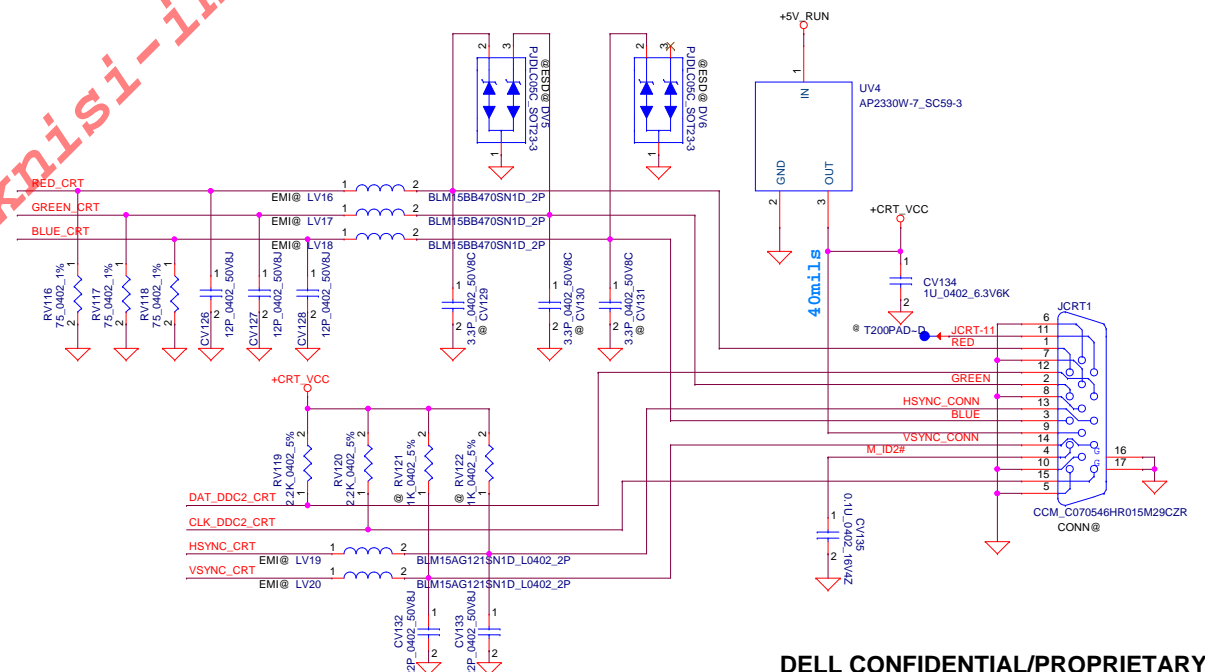
Output pre-emphasis setting; Internal pull down at ~150kΩ, 3.3V I/O



For Realtek Solution

Operation Mode Table

		POL1(P10)	
		0	1
POL2 (P9)	0	X	X
	1	ROM	EEPROM



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title	<i>DP to VGA & VGA Conn</i>
-------	----------------------------------------

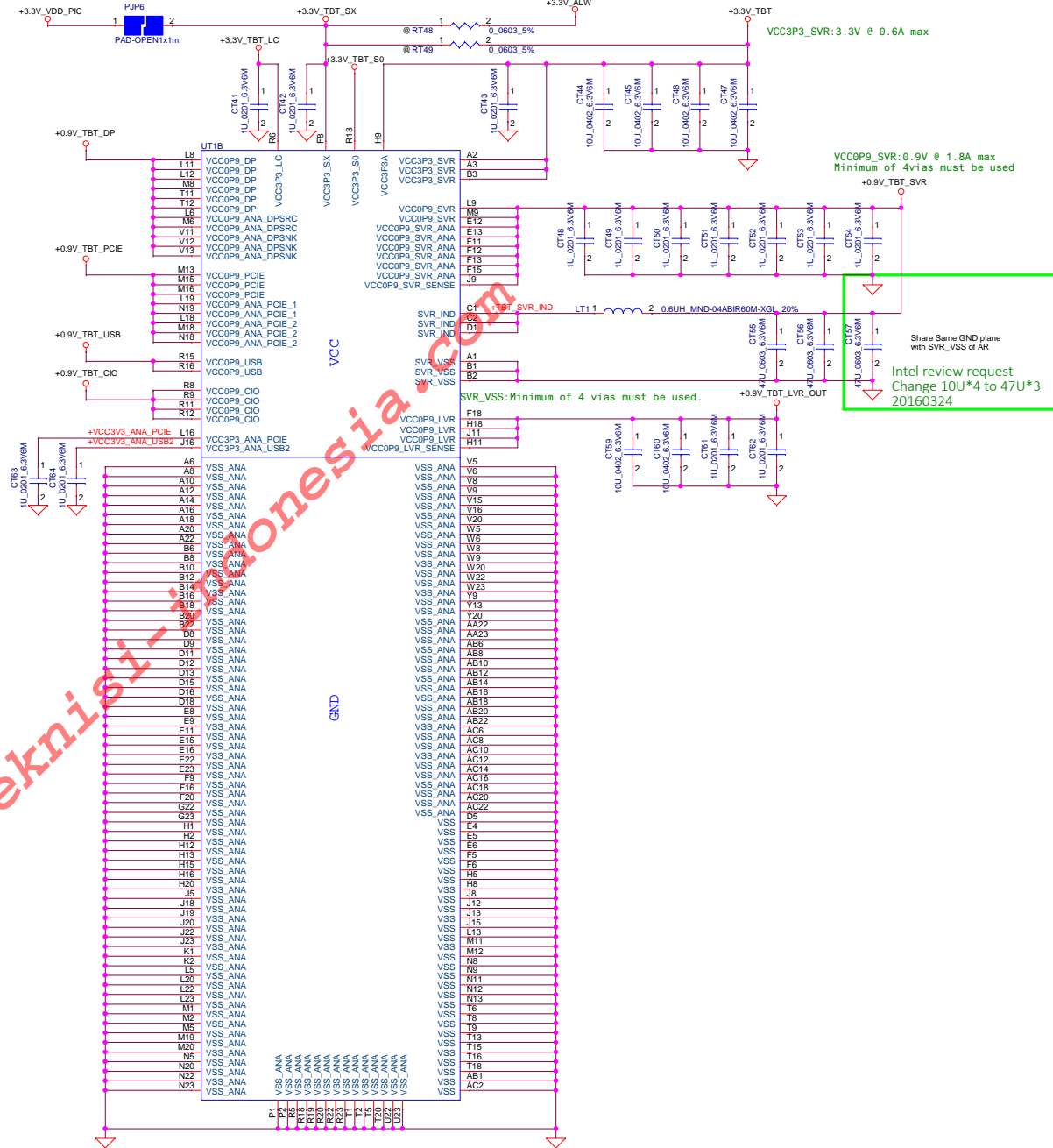
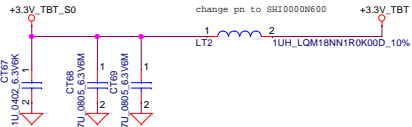
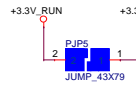
IDENTICAL OF R00	Document Number LA-E152P
---------------------	------------------------------------

Rev	
1.0	

Date:	Thursday, November 10, 2016	Sheet	28	of	74
-------	-----------------------------	-------	----	----	----

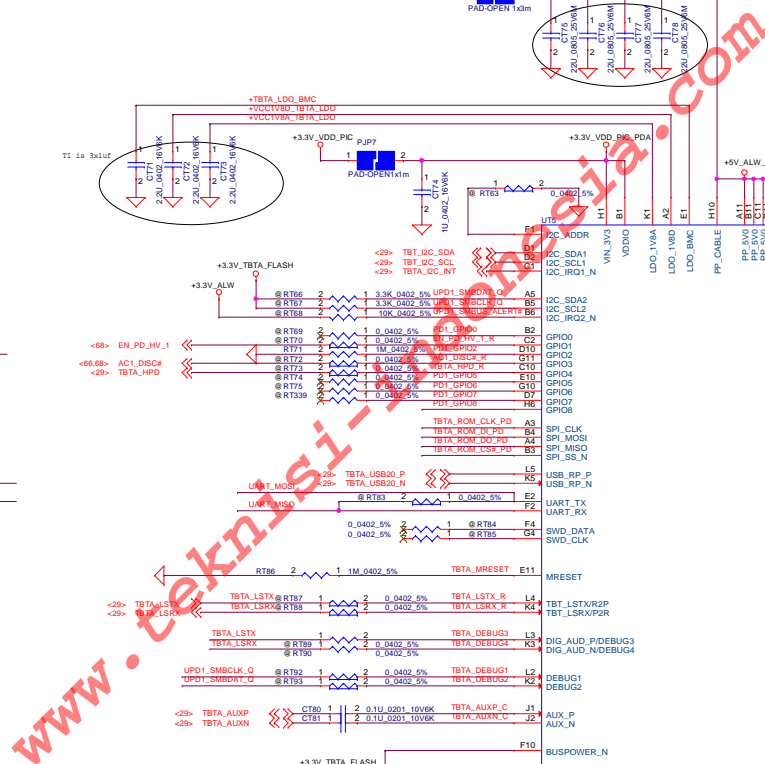
Security Classification	Compal Secret Data		
Issued Date	2016/01/01	Deciphered Date	2017/01/01
<p>THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OR 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.</p>			

TBT Power circuit

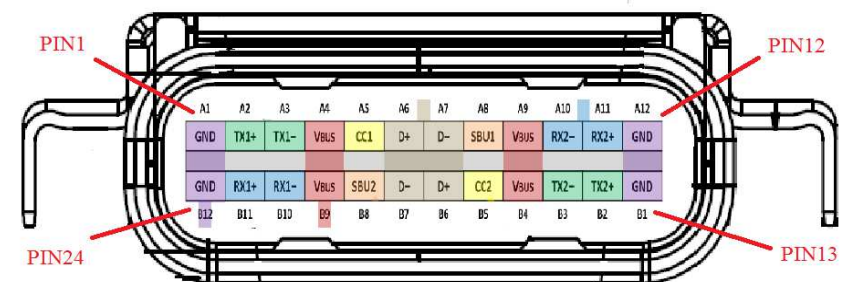
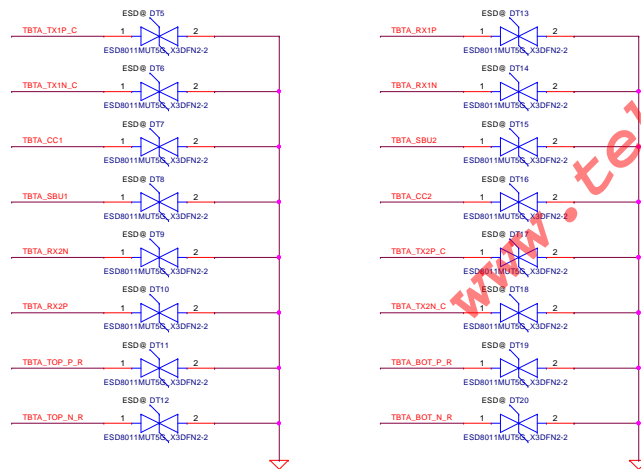
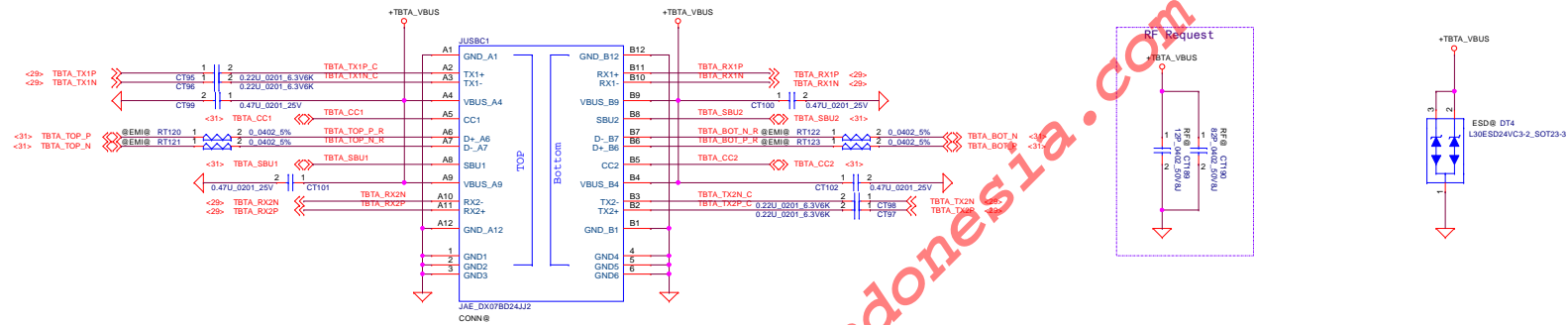


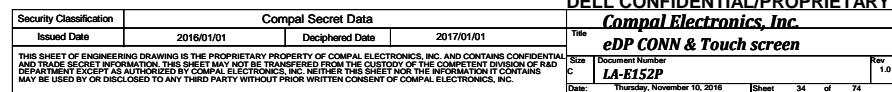
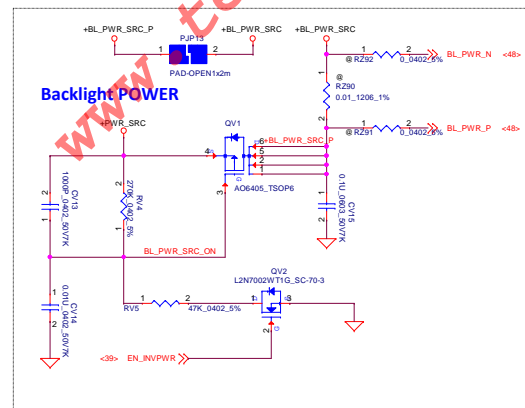
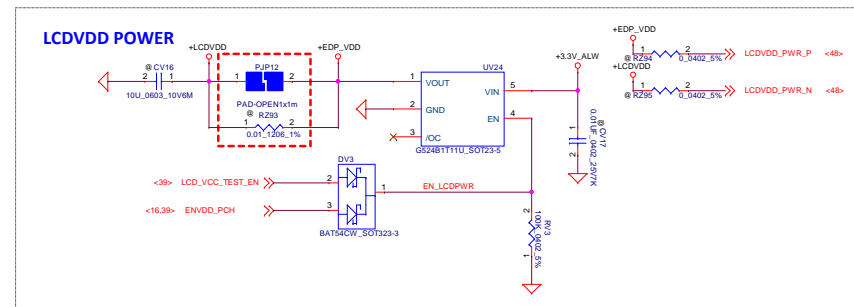
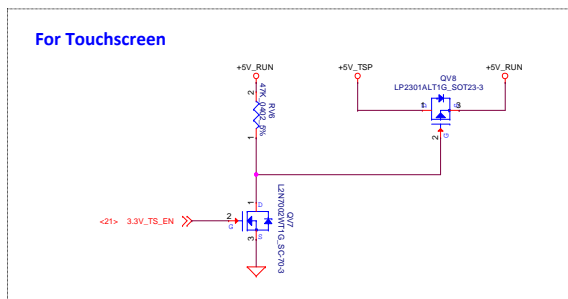
Security Classification	Compal Secret Data	
Issued Date	2016/01/01	Deciphered Date
		2017/01/01
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSMITTED FROM THE CUSTODY OF THE COMPETENT DIVISION OF ROAD 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.		

DELL CONFIDENTIAL/PROPRIETARY	
Compal Electronics, Inc.	
TBT-AR-SP(2/2) PWR,VSS	
Size	Rev
B	1.0
Document Number	LA-E152P
Date	Thursday, November 10, 2016
Sheet	30 of 74

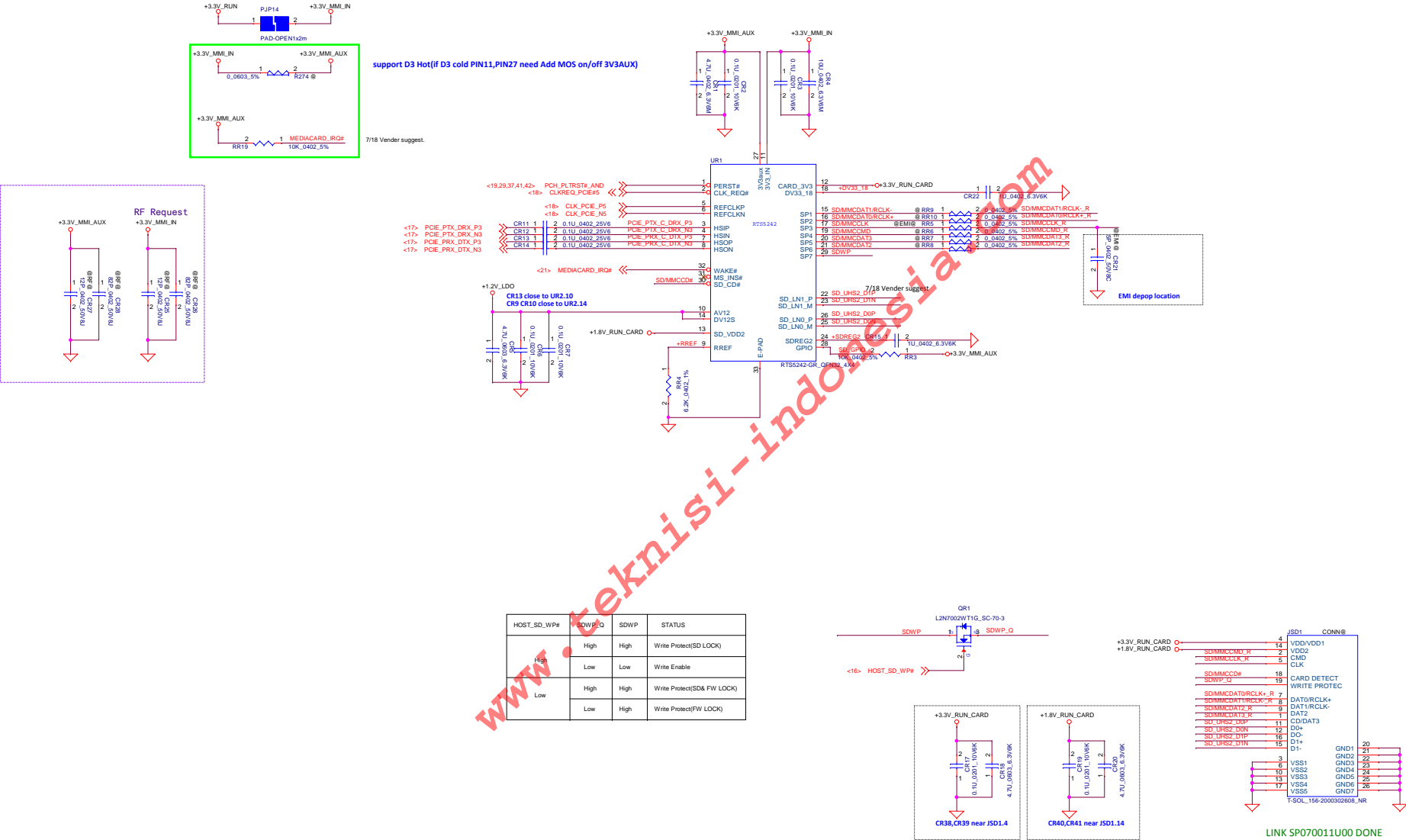


For AR Config

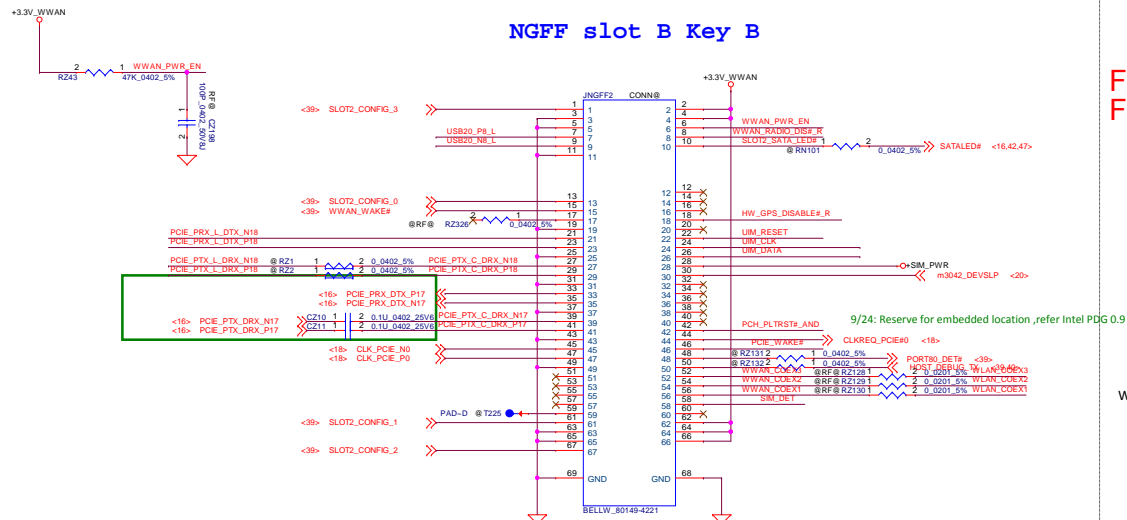




For PCIE Interface

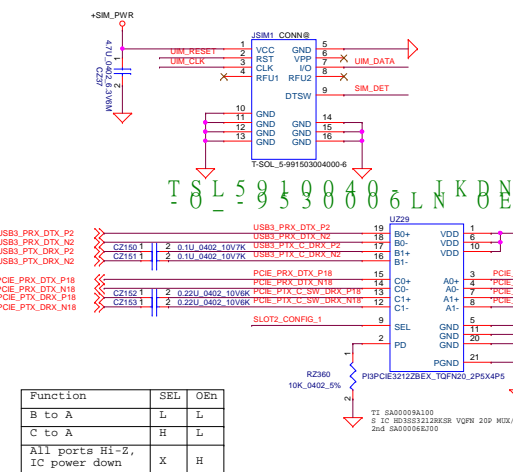


NGFF slot B Key B



STATE #	CONFIG_0	CONFIG_1	CONFIG_2	CONFIG_3	Module Type	m3042_PCIE#_SATA
0	GND	GND	GND	GND	SSD-SATA	High
1	GND	HIGH	GND	GND	SSD-PCI-E(2 lane)	Low
8	HIGH	GND	GND	GND	WWAN	Low
14	HIGH	GND	HIGH	HIGH	HCA-PCI-E(1 lane)	Low
15	HIGH	HIGH	HIGH	HIGH	NA	Low

SIM Card Push-Push



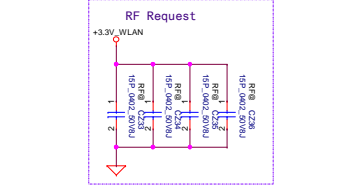
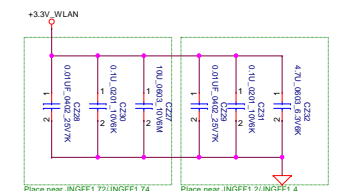
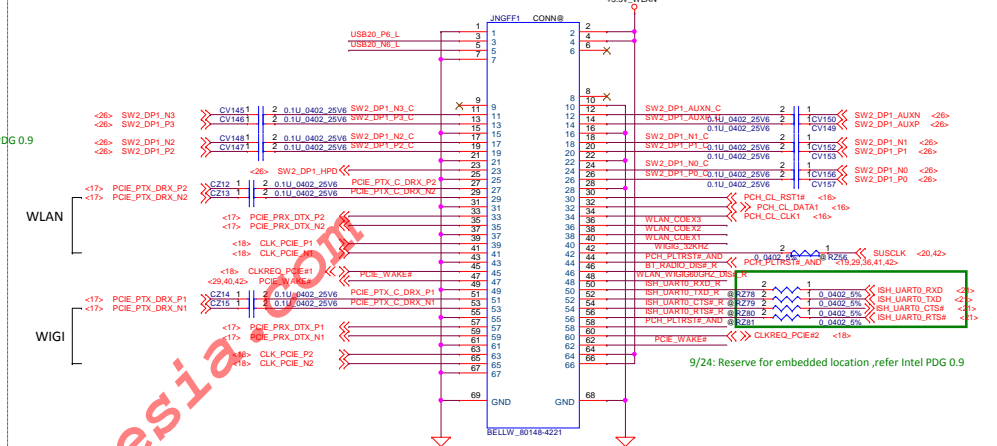
Function	SEL	OEn
B to A	L	L
C to A	H	L
All ports Hi-Z, IC power down	X	H

TI: 8A0009A100
1C: 80303232BEX_VQPN 20P MIX/DEMUX SW
2nd 8A0006B300

for Brekenridge 15 DSC

For TBT SW2_DP1
For non-TBT SW1_DP1

NGFF slot A Key A 80148-3221&80148-4221 Footprint the same



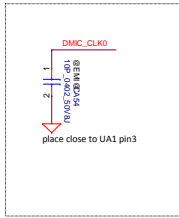
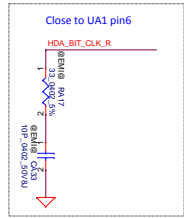
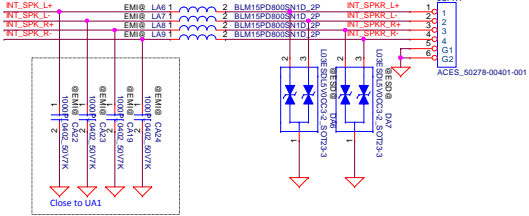
Power Rating TBD

PWR Rail	Voltage Tolerance	Primary Power	Aux Power
+3.3V		Peak	Normal

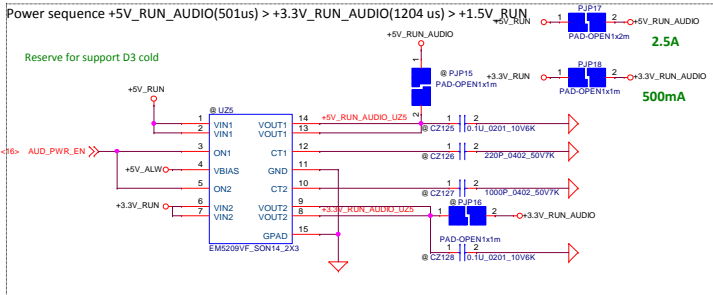
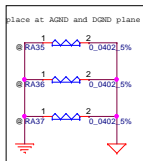
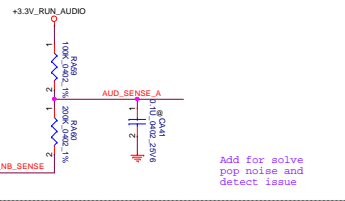
1W x 1ch, 4ohm (Transducer spec is 8Ohm/0.5Watt per unit, there are two transducer units in one speaker box)

Internal Speakers Header

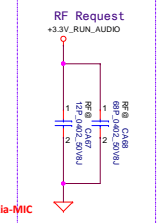
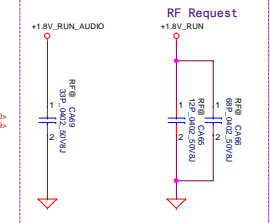
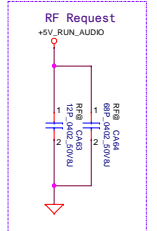
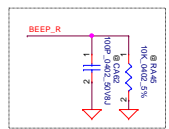
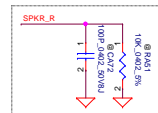
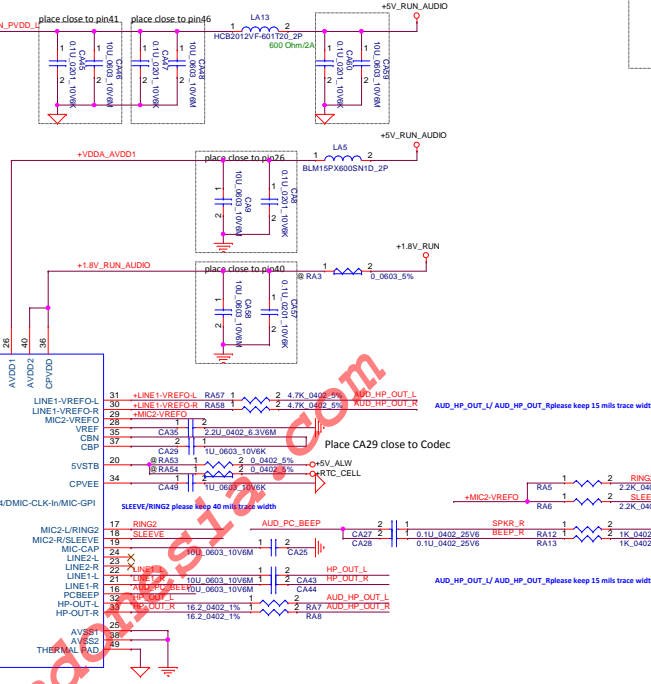
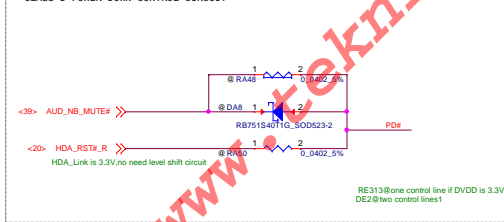
40 mils trace keep 20 mil spacing



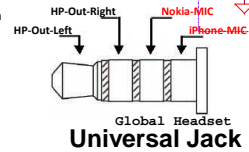
Place closely to Pin 13.



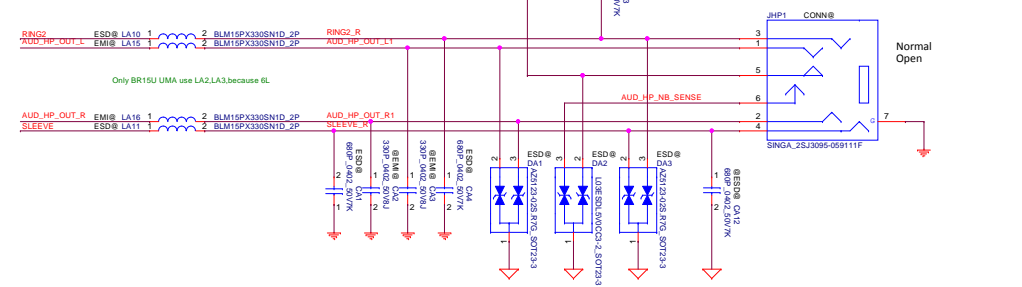
CLASS-D POWER DOWN CONTROL CIRCUIT



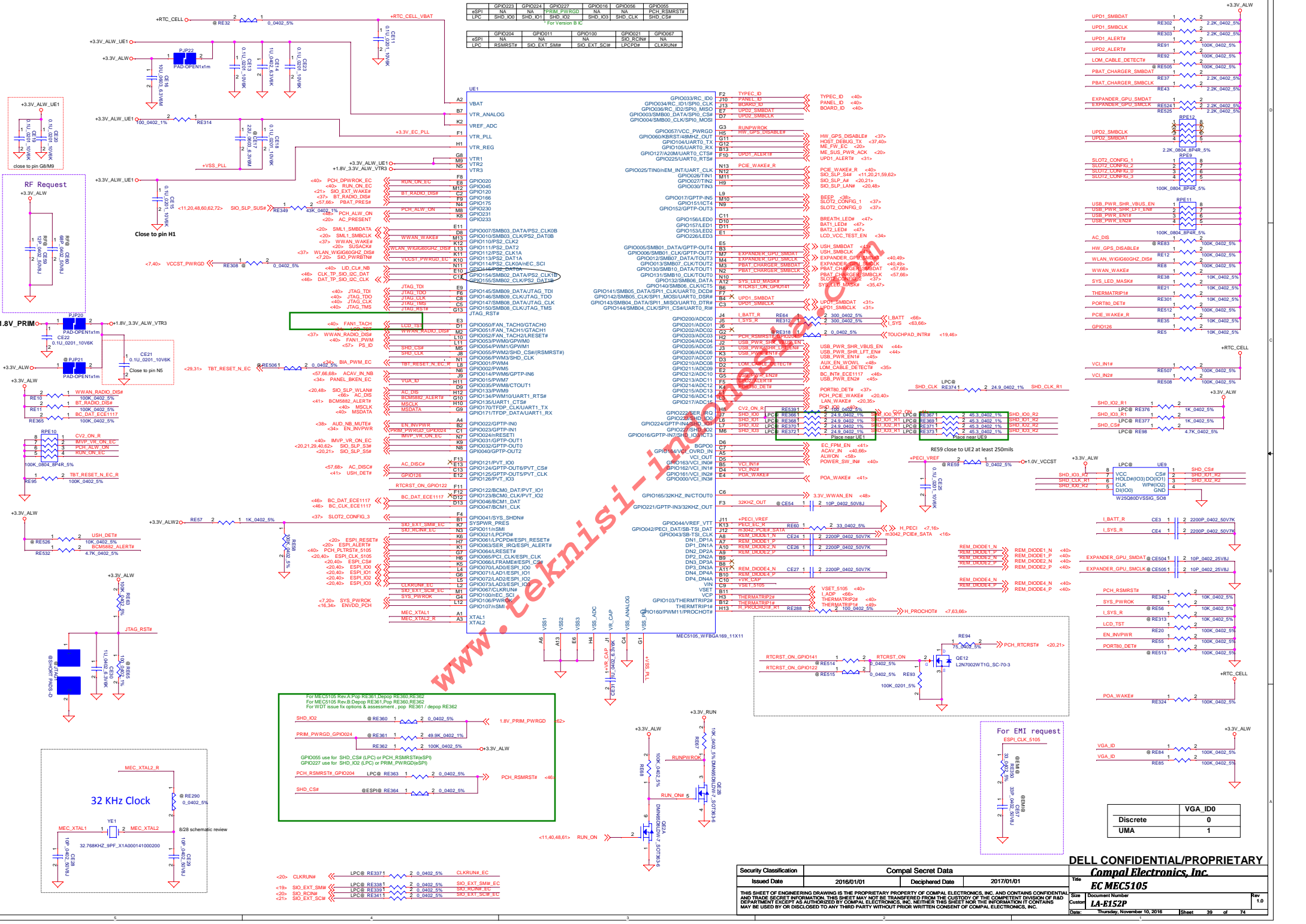
Add this Filter to avoid other components/chips are influenced



Global Headset Universal Jack



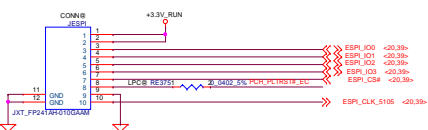
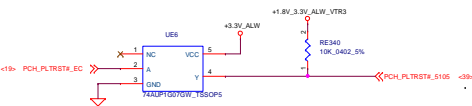
Security Classification		Compal Secret Data		Title	
Issued Date	2016/01/01	Deciphered Date	2017/01/01	Document Number	LA-E152P
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED 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.				Date:	Thursday, November 10, 2016
DELL CONFIDENTIAL/PROPRIETARY				Sheet	38 of 74



www.tekni.si

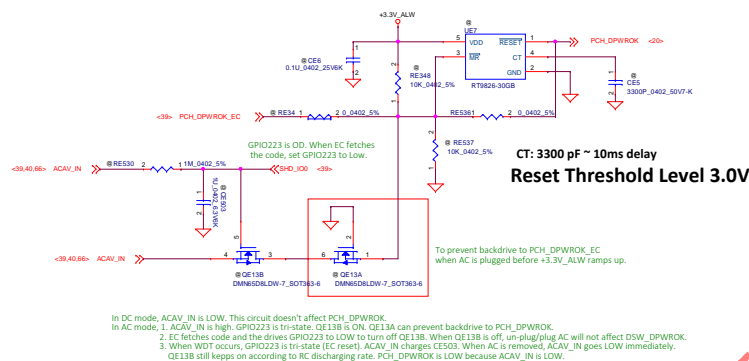
Pin	Function	Pin	Function	Pin	Function
1	RTN_CELL	101	RTN_CELL	191	RTN_CELL
2	RTN_CELL	102	RTN_CELL	192	RTN_CELL
3	RTN_CELL	103	RTN_CELL	193	RTN_CELL
4	RTN_CELL	104	RTN_CELL	194	RTN_CELL
5	RTN_CELL	105	RTN_CELL	195	RTN_CELL
6	RTN_CELL	106	RTN_CELL	196	RTN_CELL
7	RTN_CELL	107	RTN_CELL	197	RTN_CELL
8	RTN_CELL	108	RTN_CELL	198	RTN_CELL
9	RTN_CELL	109	RTN_CELL	199	RTN_CELL
10	RTN_CELL	110	RTN_CELL	200	RTN_CELL
11	RTN_CELL	111	RTN_CELL	201	RTN_CELL
12	RTN_CELL	112	RTN_CELL	202	RTN_CELL
13	RTN_CELL	113	RTN_CELL	203	RTN_CELL
14	RTN_CELL	114	RTN_CELL	204	RTN_CELL
15	RTN_CELL	115	RTN_CELL	205	RTN_CELL
16	RTN_CELL	116	RTN_CELL	206	RTN_CELL
17	RTN_CELL	117	RTN_CELL	207	RTN_CELL
18	RTN_CELL	118	RTN_CELL	208	RTN_CELL
19	RTN_CELL	119	RTN_CELL	209	RTN_CELL
20	RTN_CELL	120	RTN_CELL	210	RTN_CELL
21	RTN_CELL	121	RTN_CELL	211	RTN_CELL
22	RTN_CELL	122	RTN_CELL	212	RTN_CELL
23	RTN_CELL	123	RTN_CELL	213	RTN_CELL
24	RTN_CELL	124	RTN_CELL	214	RTN_CELL
25	RTN_CELL	125	RTN_CELL	215	RTN_CELL
26	RTN_CELL	126	RTN_CELL	216	RTN_CELL
27	RTN_CELL	127	RTN_CELL	217	RTN_CELL
28	RTN_CELL	128	RTN_CELL	218	RTN_CELL
29	RTN_CELL	129	RTN_CELL	219	RTN_CELL
30	RTN_CELL	130	RTN_CELL	220	RTN_CELL
31	RTN_CELL	131	RTN_CELL	221	RTN_CELL
32	RTN_CELL	132	RTN_CELL	222	RTN_CELL
33	RTN_CELL	133	RTN_CELL	223	RTN_CELL
34	RTN_CELL	134	RTN_CELL	224	RTN_CELL
35	RTN_CELL	135	RTN_CELL	225	RTN_CELL
36	RTN_CELL	136	RTN_CELL	226	RTN_CELL
37	RTN_CELL	137	RTN_CELL	227	RTN_CELL
38	RTN_CELL	138	RTN_CELL	228	RTN_CELL
39	RTN_CELL	139	RTN_CELL	229	RTN_CELL
40	RTN_CELL	140	RTN_CELL	230	RTN_CELL
41	RTN_CELL	141	RTN_CELL	231	RTN_CELL
42	RTN_CELL	142	RTN_CELL	232	RTN_CELL
43	RTN_CELL	143	RTN_CELL	233	RTN_CELL

Discrete	UMA
0	1



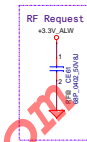
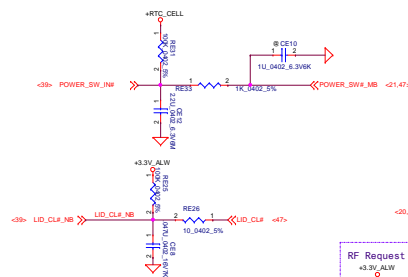
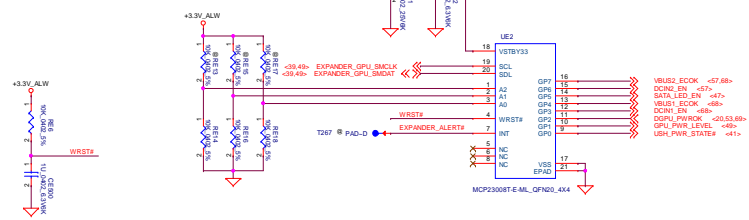
LPC 80Port Debug	LPC	ESPI
1	+3.3V_RUN	+3.3V_RUN
2	+3.3V_RUN	+3.3V_RUN
3	LPC_LAD0	ESPI_I00
4	LPC_LAD1	ESPI_I01
5	LPC_LAD2	ESPI_I02
6	LPC_LAD3	ESPI_I03
7	LPC_FRAME#	ESPI_CS#
8	PCH_PLTRST#	NA
9	GND	GND
10	LPC_CLOCK	ESPI_CLK

PAGE	ESPI	LPC
8	RC25_10K	RC8_15ohm RC13/RC27_8.2K
18	RC212_0ohm 0603	RC211_0ohm 0603
31		RE337,RE338 RE339,RE340, RE341 0_ohm
32	RE2 / RE3 0_ohm	

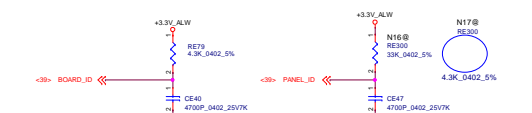
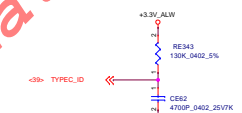
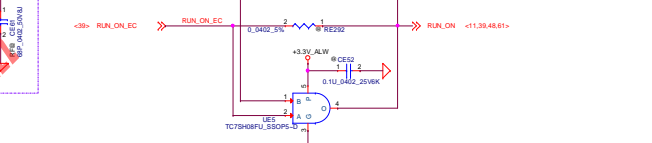
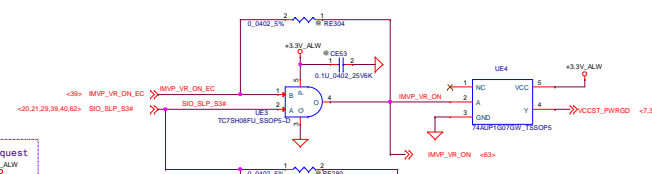
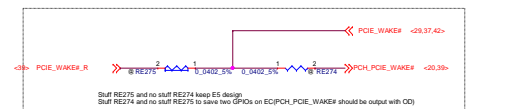


Control Byte
R/W 0 = Write R/W 1 = Read

SMBus address 0x40



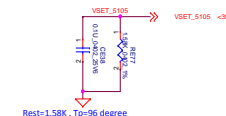
RE343	CE62	REV
240K	4700p	Single Port ACE w/o AR
130K	4700p	Single Port ACE w/AR
62K	4700p	Dual Port ACE w/o AR
33K	4700p	Dual Port ACE w/AR
8.2K	4700p	Dual Port ACE (w/AR +w/o AR)
4.3K	4700p	
2K	4700p	
1K	4700p	



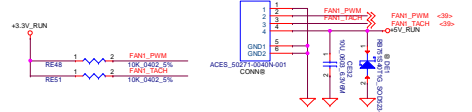
RE79	CE40	REV
240K	4700p	X00
130K	4700p	X01
62K	4700p	X02
33K	4700p	X03
8.2K	4700p	
4.3K	4700p	A00
2K	4700p	
1K	4700p	

RE300	CE47	PANEL SIZE
240K	4700p	12"
130K	4700p	14"
33K	4700p	BR15 H
4.3K	4700p	BR15 P

PD_ACE_DET# rise time is measured from 5%~68% BOARD_ID rise time is measured from 5%~68% PANEL_ID rise time is measured from 5%~68%



Link 50271-0040N-001 DONE



Thermal diode mapping

5105 Channel	Location
DP1/DN1	CPU (QE3)
DP2/DN2	WiGig (QE5)
DN2a/DP2a	DDR (QE7)
DP3/DN3	NA
DP4/DN4	CPU VR (QE6)

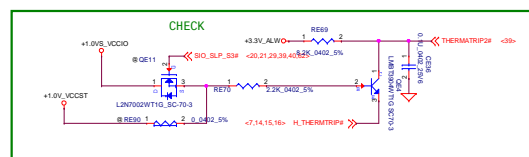
Place under CPU
Place CE35 close to the QE3 as possible

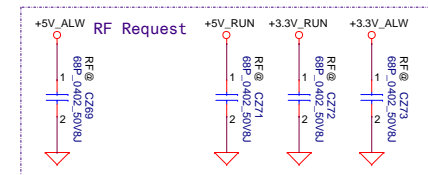
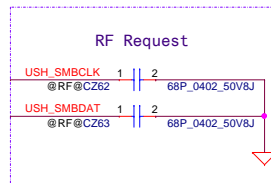
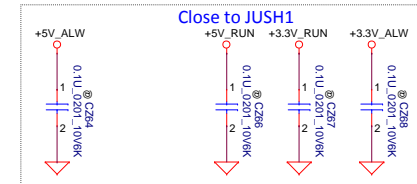
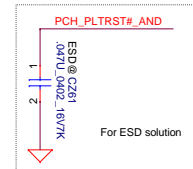
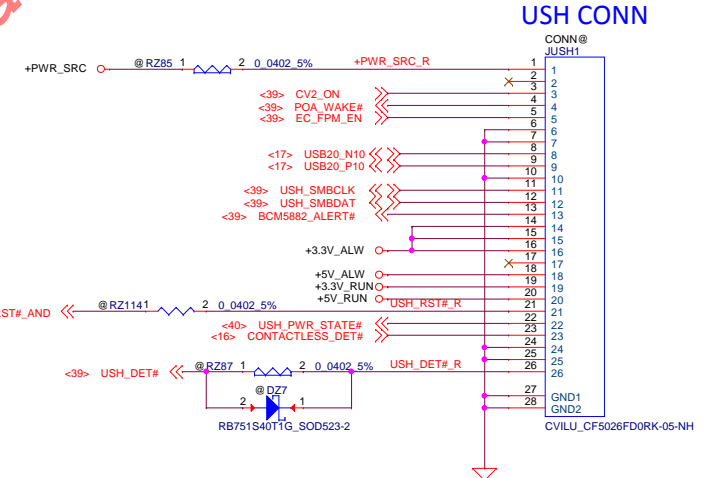
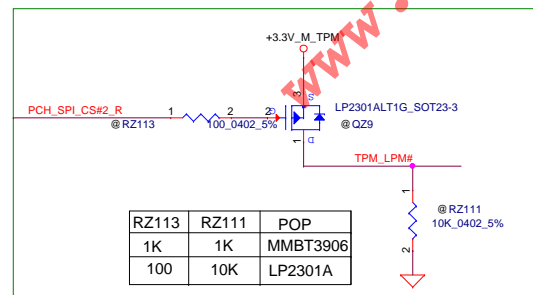
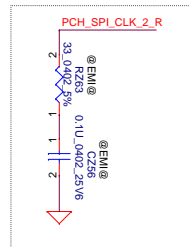
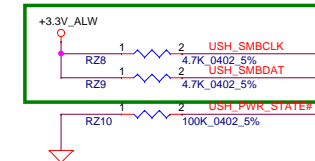
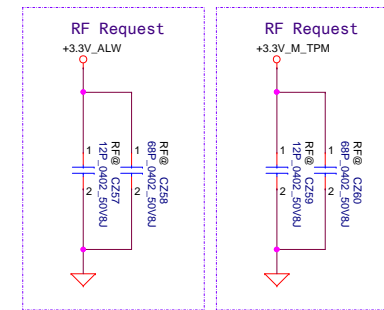
DP2/DN2 for WiGig on QE5, place QE5 close to Type-C and CE37 close to QE5

DP4/DN4 for Skin on QE6, place QE6 close to VCCIN VR chip



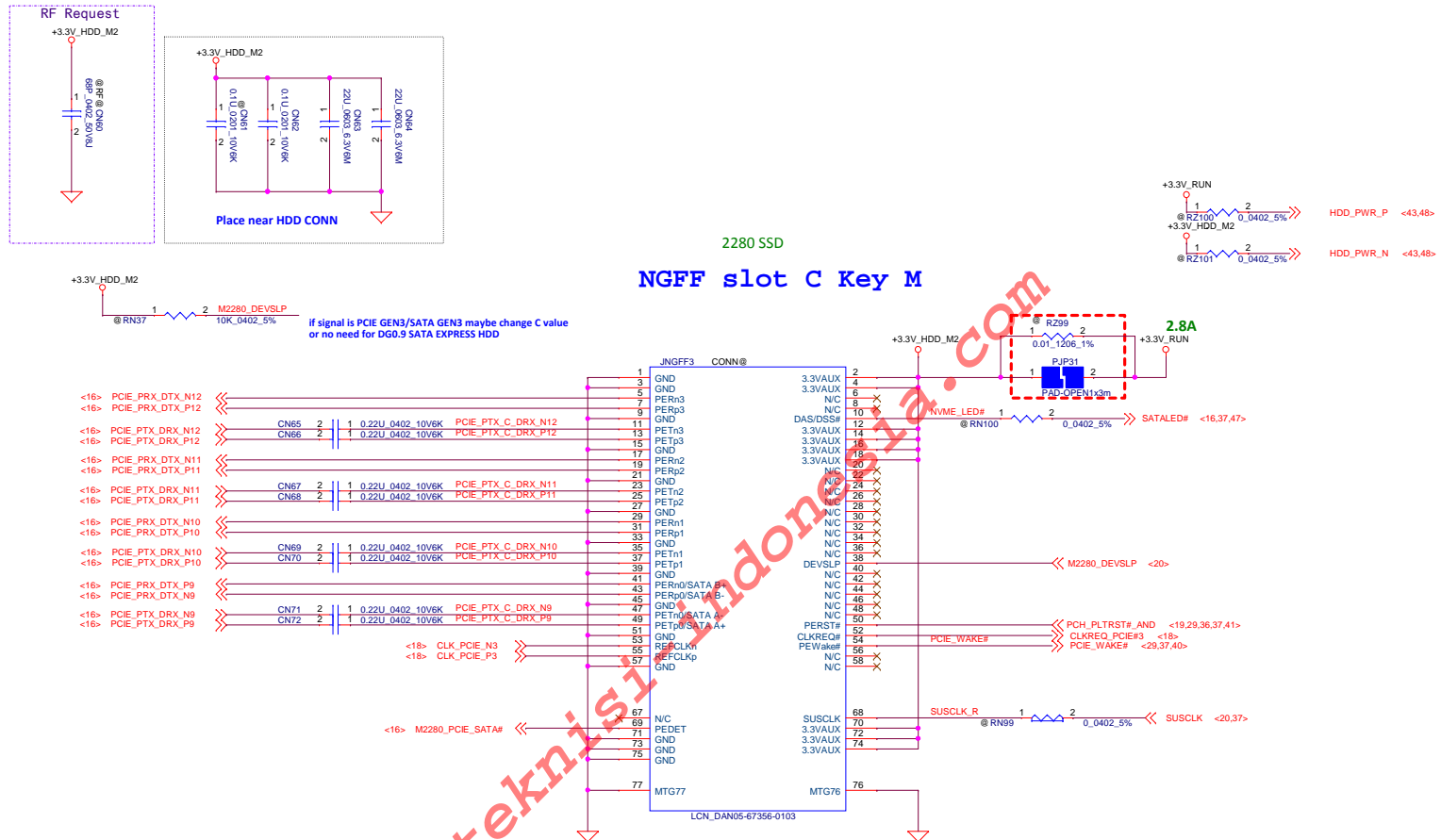
DN2a/DP2a for DDR on QE7, place QE7 close to DDR and CE46 close to QE7



[illegible]

Security Classification		Compal Secret Data		SECRET CONFIDENTIAL NOT RELEASABLE Compal Electronics, Inc.	
Issued Date	2016/01/01	Deciphered Date	2017/01/01	Title	USH & TPM
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 RESPONSIBILITY EXERCISED BY COMPAL ELECTRONICS, INC. WITHOUT ITS WRITTEN CONSENT. 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.				Doc No	Rev
				Document Number	1.0
				LA-E152P	
Date:		Thursday, November 10, 2016		Sheet	41 of 74

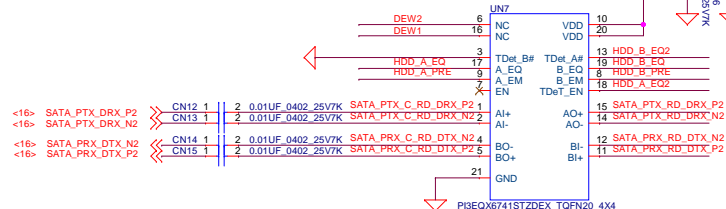
For Breckenridge 15



Security Classification		Compal Secret Data		DELL CONFIDENTIAL/PROPRIETARY	
Issued Date		2016/01/01	Deciphered Date		2017/01/01
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.					
Title		Compal Electronics, Inc. M2 2280 Socket			
Size	Document Number				Rev
B-		LA-E152P			
Date		Thursday, November 10, 2016		Sheet	42 of 74

	pin 3	pin 6	pin 13	pin 16	pin 18
Pericom	TDeT_B#	N	TDeT_A#	N	TDeT_EN
TI	D	W	D	W	D
Parade	D	W	B_EQ2	W	A_EQ2

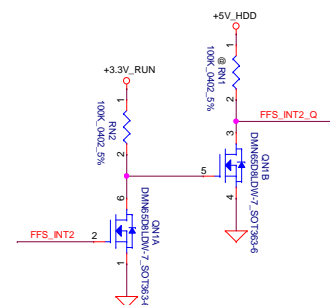
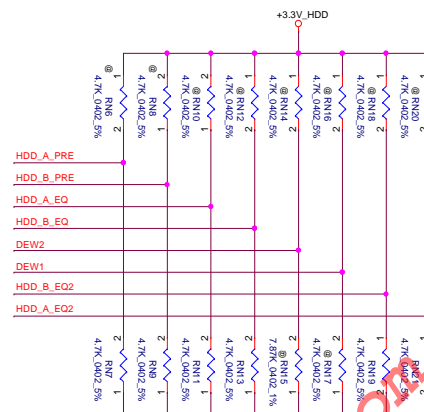
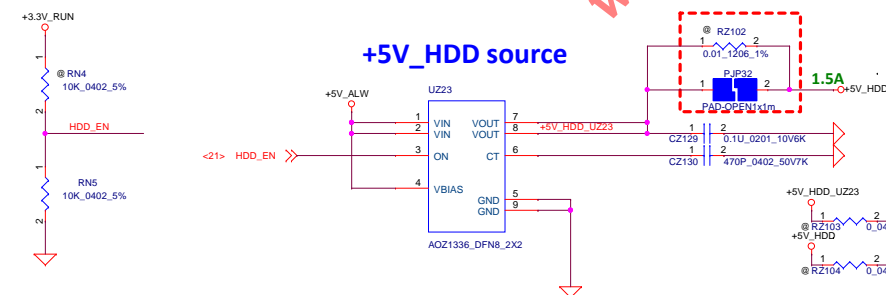
SATA Repeater



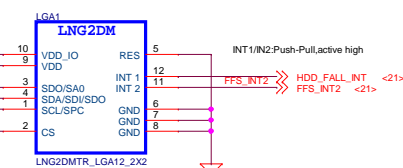
	HDD_A_EQ PIN17	HDD_B_EQ PIN19	HDD_A_EQ2 PIN18	HDD_B_EQ2 PIN13	DEW1 PIN16	DEW2 PIN6	HDD_A_PRE PIN9	HDD_B_PRE PIN8
Pericom PI3EQX6741ST	PD (RN11)	PD (RN13)	PD (RN21)	PD (RN19)	NC	NC	PD (RN7)	PD (RN8)
TI SN75LVCP601	PD (RN11)	NC	PD (RN21)	PD (RN19)	NC (IPU)	NC (IPU)	PH (RN6)	PH (RN8)
Parade PS8527C	PD (RN11)	PD (RN13)	PD (RN21)	PD (RN19)	NC (1/2 VDD)	PD (RN15)	NC (1/2 VDD)	NC (1/2 VDD)

			A_EQ	B_EQ		A_EM	B_EM
Main	Pericom	0 NC 1	3dB 6dB 9dB	3dB 6dB 9dB	0 NC 1	0dB 1.5dB	0dB 1.5dB
2nd	TI	0 NC 1	7dB 9dB 14dB	7dB 9dB 14dB	0 NC 1	0dB -4dB -2dB	0dB -4dB -2dB
3rd	Parade	EQ2 EQ1 (M = VDD/2) 0 M 0 0 0 1 M M M 0 M 1 1 M 1 0 1 1	2.4dB 7.4dB 14.4dB 12.2dB 9.4dB 13.3dB 6.2dB 11.2dB 5dB	2.4dB 7.4dB 14.4dB 12.2dB 9.4dB 13.3dB 6.2dB 11.2dB 5dB	0 M 1	0dB -3.5dB -6dB	0dB -3.5dB -6dB

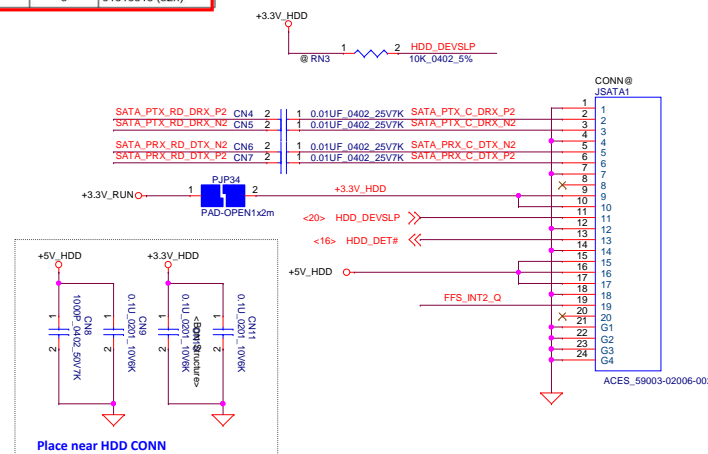
* red color is current setting



Free Fall Sensor



Command	SAD[6:1]	SAD[0] = SA0	R/W	SAD+R/W
Read	010100	0	1	01010001 (51h)
Write	010100	0	0	01010000 (50h)
Read	010100	1	1	01010011 (53h)
Write	010100	1	0	01010010 (52h)

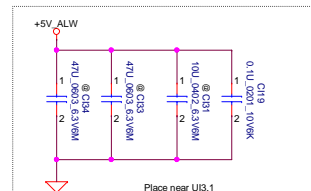
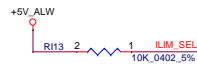
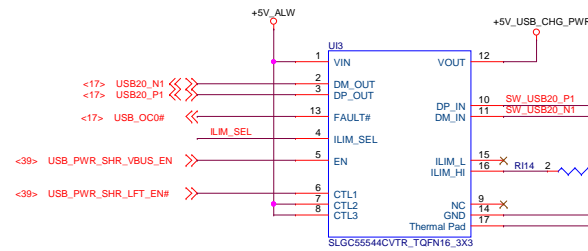
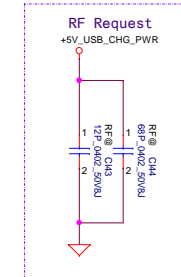
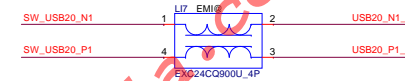
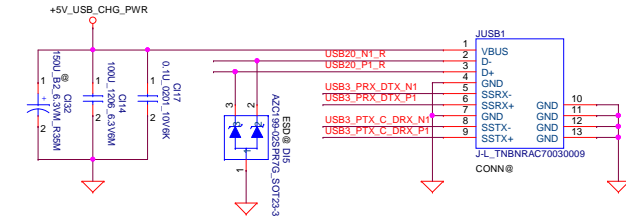
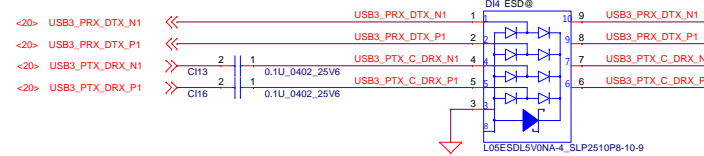


DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Security Classification	Compal Secret Data		Title
Issued Date	2016/01/01	Deciphered Date	2017/01/01
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 LA-E152P
Date:	Thursday, November 10, 2016	Sheet	43 of 74

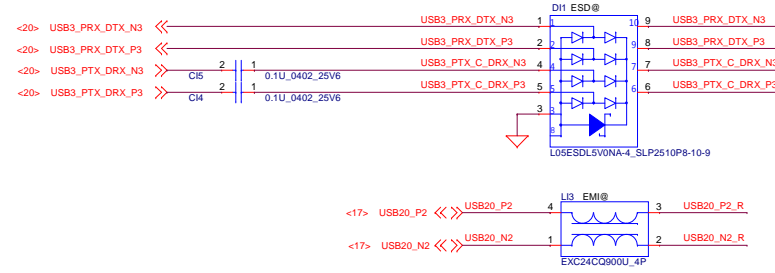
For PWR SW + Charger combine IC



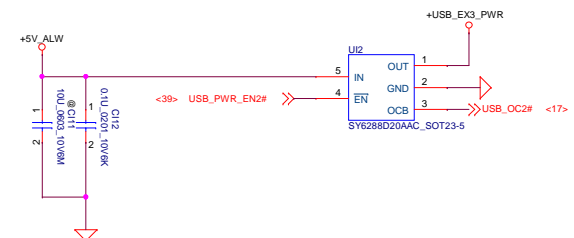
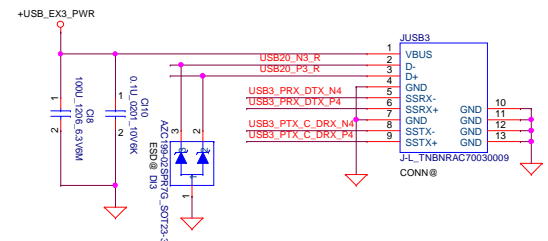
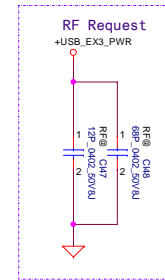
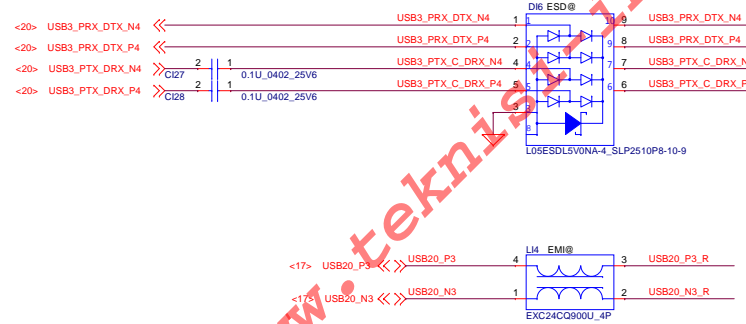
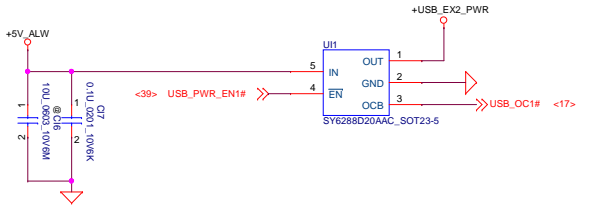
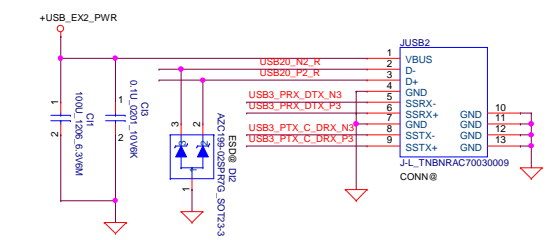
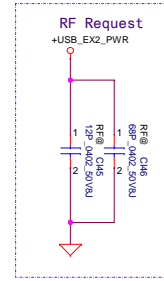
www.teknisi-indonesia.com

Security Classification		Compal Secret Data		DELL CONFIDENTIAL/PROPRIETARY Compal Electronics, Inc.				
Issued Date	2016/01/01	Deciphered Date	2017/01/01	Title	USB SW			
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	Document Number	Rev		
				A	LA-E152P	1.0		
				Date	Thursday, November 10, 2016		Sheet	44

For Breckenridge 14&15/Steamboat 14

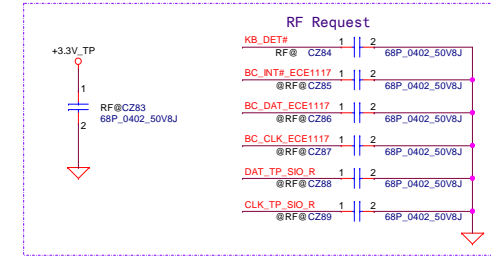
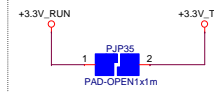
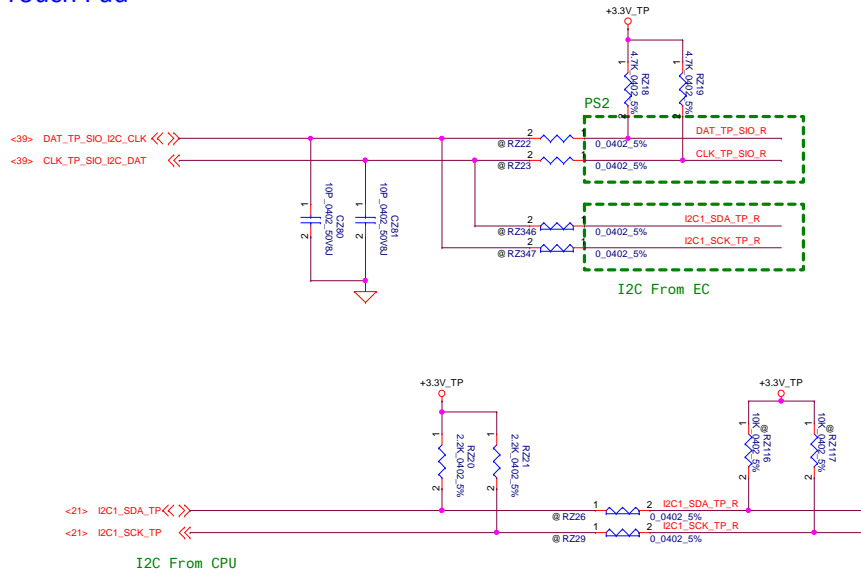


DfB request:
main SM070003200 (INPAQ_MCM1012B900F06BP_4P)
Footprint use 2nd source SM070004400 (PANAS_EXC24CQ900U_4P)
Pitch change from 0.5mm to 0.55mm

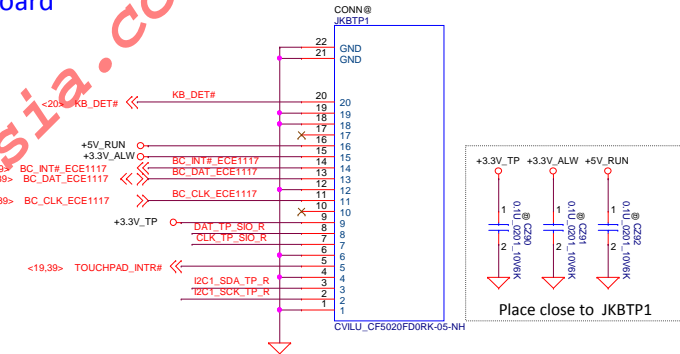


Security Classification				Compal Secret Data				DELL CONFIDENTIAL/PROPRIETARY			
Issued Date				Deciphered Date				Compal Electronics, Inc.			
2016/01/01				2017/01/01				Title			
								JUSB2&JUSB3			
								Document Number			
								LA-E152P			
								Date			
								Thursday, November 10, 2016			
								Sheet 45 of 74			

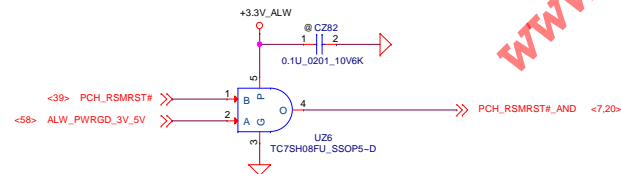
Touch Pad



Keyboard

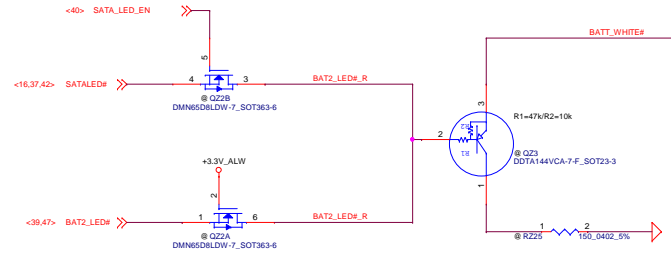


RSMRST circuit



HDD LED MUX

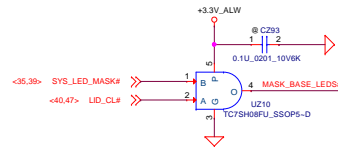
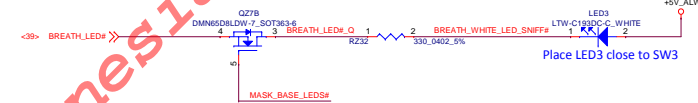
means EC can switch battery white led and HDD LED by hot key "Fn+H"



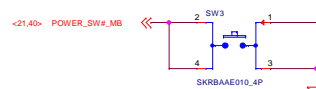
Battery LED



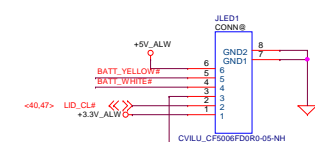
Breath LED



POWER & INSTANT ON SWITCH



LED board CONN

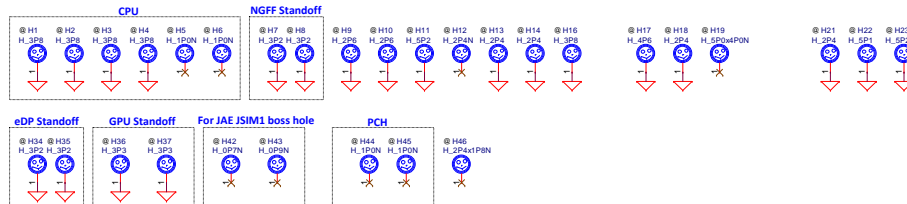


Fiducial Mark

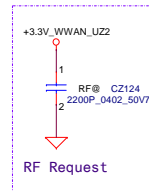
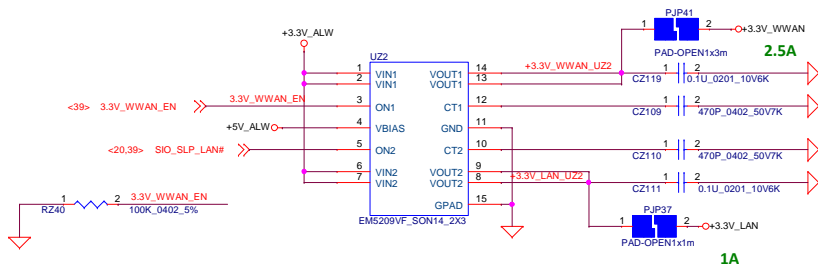


LED Circuit Control Table

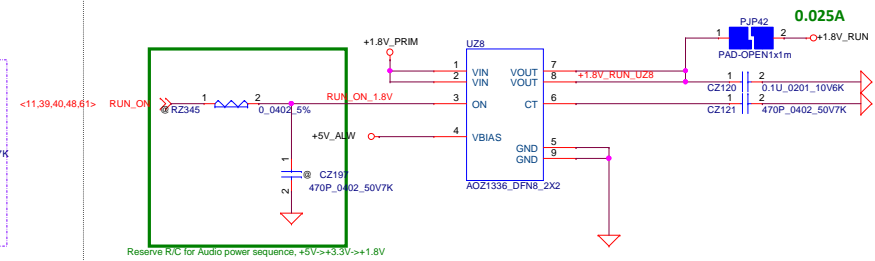
	SYS_LED_MASK#	LID_CL#
Mask All LEDs (Unobtrusive mode)	0	X
Mask Base MB LEDs (Lid Closed)	1	0
Do not Mask LEDs (Lid Opened)	1	1



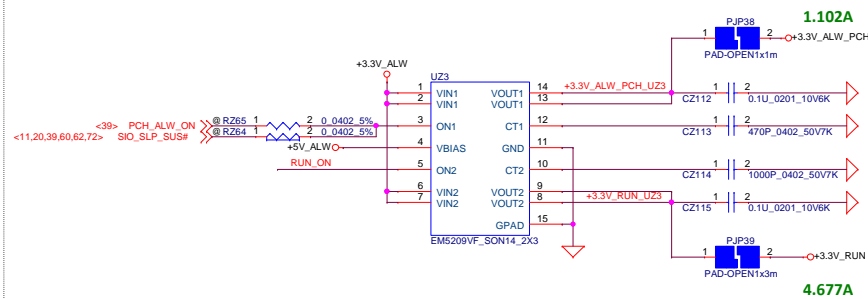
+3.3V_WWAN/+3.3V_LAN source



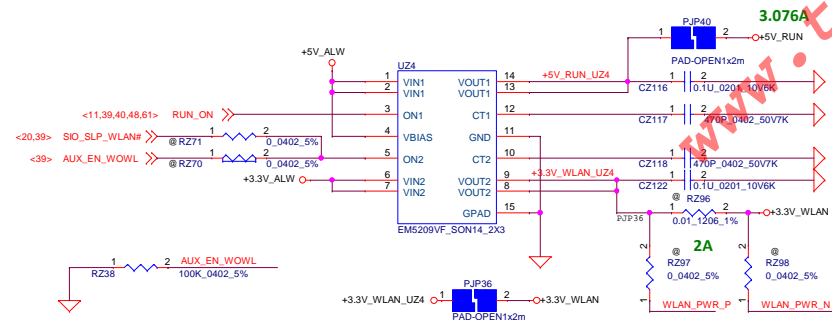
+1.8V_RUN source



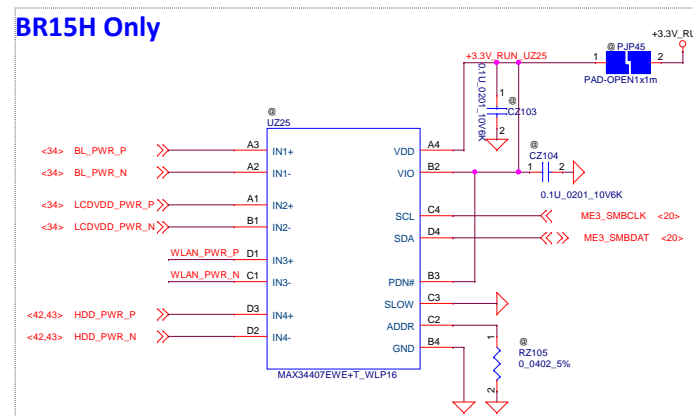
+3.3V_ALW_PCH/+3.3V_RUN source



+5V_RUN/+3.3V_WLAN source



BR15H Only

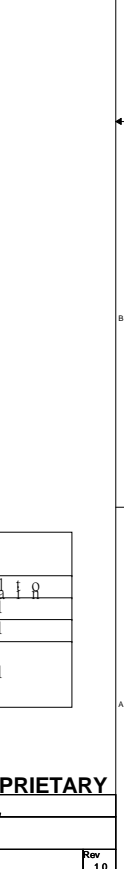
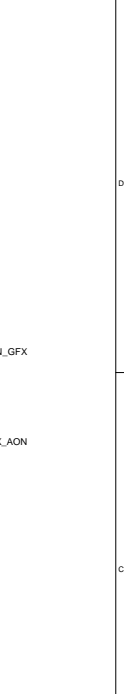


DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Power control

Security Classification	Compal Secret Data		Title	
Issued Date	2016/01/01	Deciphered Date	2017/01/01	Document Number
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.				Rev 1.0
Date:	Thursday, November 10, 2016	Sheet	48	of 74



DELL CONFIDENTIAL/PROPRIETARY			
<i>Compal Electronics, Inc.</i>			
Title	<i>N16S PCIE,I2C,DAC,GPIO</i>		
Size B	Document Number	Rev	
	<i>LA-E152P</i>	1.0	
Date:	Thursday, November 10, 2016	Sheet	49 of 74

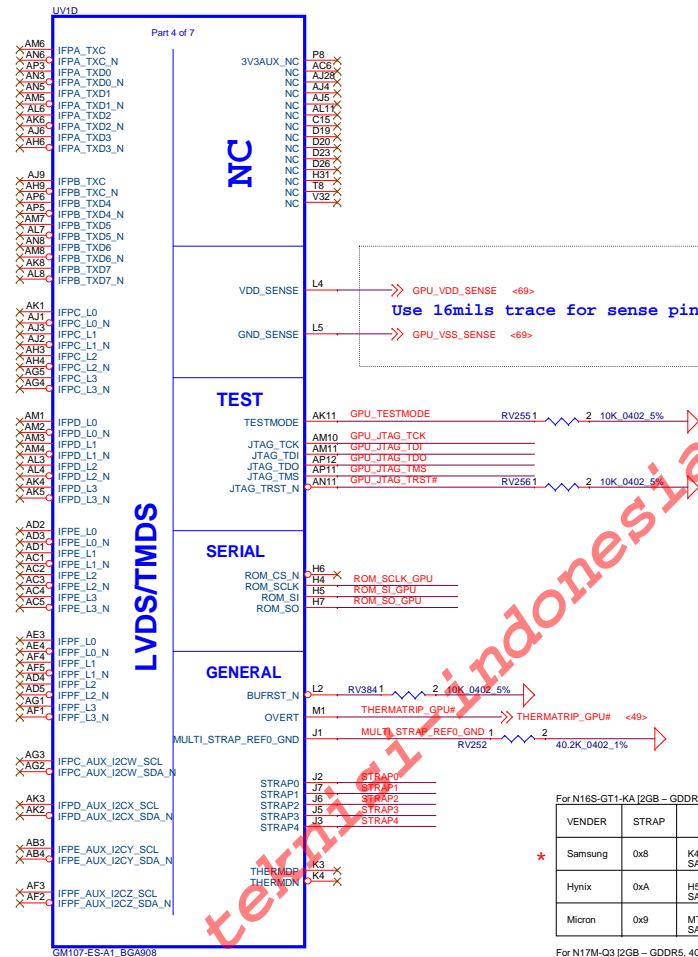
G A P Y C S f i e	
G D F C E	D S I P i o n
0	S n P i m q y D A C f e q i n D Y C C l s s C g e B R)
1	P i q y D p l y q v G D f e l C f a s C d z B h

[illegible]

256Mx32	Samsung	K4G80325FB-HC03	B-die	0x8	2500	N/A	Post production ready
	Hynix	H5CG8H24MJR-T2C	M-die	0xA	2500	N/A	Post production candidate
	Micron	MT51J256M32HF-60-A	A-die	0x9	2500	N/A	Post production ready

Memory Density	Allowed Memory Configuration	FBDVDD/Q	Vendor	Manufacturer Part Number	Die Revision	Strap	Memory Speed Grade	Date Code Alert	Qual Plan	Status
4 Gb	128Mx32	1.35V	Samsung	K4G41325FE-HC28	E-die	0x7	5 Gbps	N/A	Full	Production candidate
			Micron	EDW40328ABG-60-F	A-die	0x4	5 Gbps	N/A	Full	Production candidate

The schematic diagram illustrates the memory array for the 32GB module. It features a grid of memory cells connected to word lines (RV236-RV249) and bit lines (N16-N17). The array is divided into two sections by a vertical center line. The left section is connected to +3.3V_GFX_A0N and the right section to +3.3V_RUN_GFX. A legend on the right identifies the signals: STRAP0, STRAP1, STRAP2, STRAP3, ROW0_S0LK_GPU, ROW1_S1_GPU, and ROW0_S0_GPU.



Strap Pin Name	Logical Strapping Bit 3	Logical Strapping Bit 2	Logical Strapping Bit 1	Logical Strapping Bit 0	Note
ROM_SCLK	SOR3_EXPOSED->0	SOR2_EXPOSED->0	SOR1_EXPOSED->0	SOR0_EXPOSED->0	ROM_SCLK pull-down RV246 4.99k to GND
ROM_SI	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]	ROM_SI pull-down RV248 24.9k to GND
ROM_SO	DEVID_SEL->0(default)	PCIE_CFG->0(default)	SMB_ALT_ADDR->0(default)	VGA_DEVICE->0 (N17M) VGA_DEVICE->1 (N16S)	ROM_SO pull-down RV250 4.99k to GND (N17M) pull up RV249 4.99k to +3.3V_GFX_AON (N16S)
STRAP0	Keep pull up to 3V3_AON and pull-down to GND footprint and stuff 50k ohm pull up				STRAP0 pull up RV235 50k to +3.3V_GFX_AON
STRAP1 STRAP2 STRAP3 STRAP4	Reserve				

DEVID_SEL/PCIE_CFG default set 0, need refer Platform Update Notification for the latest configuration

Security Classification	Compal Secret Data		
Issued Date	2016/01/01	Deciphered Date	2017/01/01

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 TO ANY OTHER DIVISION OR EXTERNAL PARTY WITHOUT THE WRITTEN PERMISSION OF THE COMPETENT DIVISION OF R&D. NO PART OF THIS SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF COMPAL ELECTRONICS, INC.

UWIF

Part 6 of 7

A2	GND, 0	GND, 100	D31
AA17	GND, 1	GND, 101	D32
AA20	GND, 2	GND, 102	E10
AA22	GND, 3	GND, 103	E22
AB17	GND, 4	GND, 104	E25
AB14	GND, 5	GND, 105	E5
AB16	GND, 6	GND, 106	E7
AB19	GND, 7	GND, 107	F10
AB2	GND, 8	GND, 108	F7
AB21	GND, 9	GND, 109	G20
A33	GND, 10	GND, 110	G18
AB23	GND, 11	GND, 111	G13
AB28	GND, 12	GND, 112	G19
AB30	GND, 13	GND, 113	G2
AB33	GND, 14	GND, 114	G22
AB5	GND, 15	GND, 115	G26
AB7	GND, 16	GND, 116	G28
AC13	GND, 17	GND, 117	G3
AC19	GND, 18	GND, 118	G30
AC17	GND, 19	GND, 119	G32
AC18	GND, 20	GND, 120	G33
AA13	GND, 21	GND, 121	G5
AC20	GND, 22	GND, 122	G7
AC22	GND, 23	GND, 123	G2
AE2	GND, 24	GND, 124	K28
AE28	GND, 25	GND, 125	K30
AE30	GND, 26	GND, 126	K3
AE32	GND, 27	GND, 127	K31
AE33	GND, 28	GND, 128	K5
AE5	GND, 29	GND, 129	K7
AE7	GND, 30	GND, 130	M13
AH10	GND, 31	GND, 131	M15
AA15	GND, 32	GND, 132	M17
AH13	GND, 33	GND, 133	M20
AH14	GND, 34	GND, 134	M18
AH19	GND, 35	GND, 135	M22
AH2	GND, 36	GND, 136	N2
AH22	GND, 37	GND, 137	N12
AH27	GND, 38	GND, 138	N14
AH28	GND, 39	GND, 139	N16
AH29	GND, 40	GND, 140	N19
AH30	GND, 41	GND, 141	N21
AH32	GND, 42	GND, 142	N23
AH33	GND, 43	GND, 143	N28
AH36	GND, 44	GND, 144	N30
AH7	GND, 45	GND, 145	N32
AJ17	GND, 46	GND, 146	N33
AK10	GND, 47	GND, 147	N6
AK7	GND, 48	GND, 148	N7
AL19	GND, 49	GND, 149	P15
AL12	GND, 50	GND, 150	P13
AL15	GND, 51	GND, 151	P17
AL17	GND, 52	GND, 152	P18
AL18	GND, 53	GND, 153	P20
AL2	GND, 54	GND, 154	P22
AL20	GND, 55	GND, 155	R12
AL21	GND, 56	GND, 156	R14
AL24	GND, 57	GND, 157	R16
AL28	GND, 58	GND, 158	R19
AL26	GND, 59	GND, 159	R21
AL28	GND, 60	GND, 160	R23
AL30	GND, 61	GND, 161	R11
AL32	GND, 62	GND, 162	R13
AL33	GND, 63	GND, 163	R17
AL5	GND, 64	GND, 164	T18
AM13	GND, 65	GND, 165	T5
AM16	GND, 66	GND, 166	T2
AM17	GND, 67	GND, 167	T20
AM19	GND, 68	GND, 168	T22
AM22	GND, 69	GND, 169	T28
AM25	GND, 70	GND, 170	AG11
AN1	GND, 71	GND, 171	T30
AN10	GND, 72	GND, 172	T5
AN13	GND, 73	GND, 173	T7
AN16	GND, 74	GND, 174	U12
AN19	GND, 75	GND, 175	U14
AN22	GND, 76	GND, 176	U16
AN25	GND, 77	GND, 177	U19
AN30	GND, 78	GND, 178	U21
AN34	GND, 79	GND, 179	U23
AN38	GND, 80	GND, 180	V12
AP7	GND, 81	GND, 181	V10
APR2	GND, 82	GND, 182	V19
B1	GND, 83	GND, 183	V21
B10	GND, 84	GND, 184	V23
B22	GND, 85	GND, 185	W13
B25	GND, 86	GND, 186	W15
B28	GND, 87	GND, 187	W17
B31	GND, 88	GND, 188	W18
B33	GND, 89	GND, 189	W20
B4	GND, 90	GND, 190	W22
B7	GND, 91	GND, 191	W28
C10	GND, 92	GND, 192	Y12
C13	GND, 93	GND, 193	Y14
C19	GND, 94	GND, 194	Y16
C22	GND, 95	GND, 195	Y19
C25	GND, 96	GND, 196	Y21
C28	GND, 97	GND, 197	Y23
C38	GND, 98	GND, 198	Y27
C7	GND, 99	GND, 199	Y31

GM107-ES-A1_BGA908

GPU_JTAG_TDO

5

GPU_JTAG_TMS

6

GPU_JTAG_TCK

7

GPU_JTAG_TDI

8

4

3

2

1

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

10K_8P4R_5%

4

+3.3V_GFX_AON

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

<

GPU_JTAG_TDO 5
 GPU_JTAG_TMS 6
 GPU_JTAG_TCK 7
 GPU_JTAG_TDI 8

@ RPV1
 10K_8P4R_5%

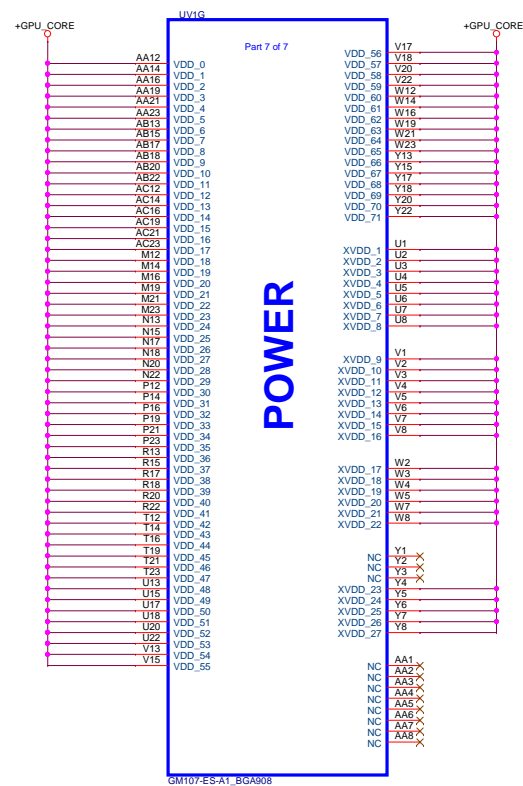
DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

N16S DP, STRAP, GND

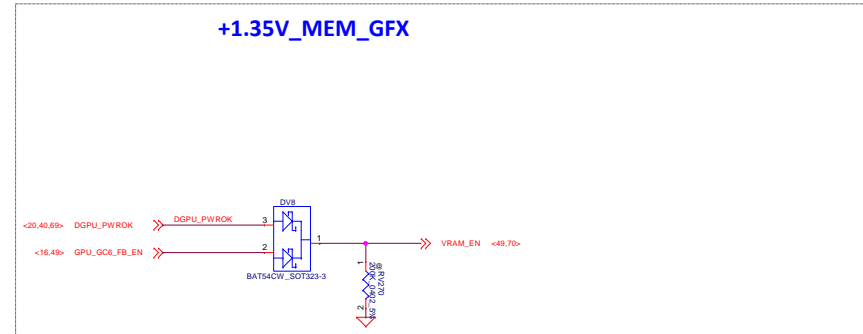
Size	Document Number	Rev
B	LA-E152P	1.0

Caps on Power Side
1UX8 4.7UX15 under GPU
4.7UX5 22UX7 330UX1 near GPU



www.teknisi-indonesia.com

Security Classification		Compal Secret Data		DELETE CONFIDENTIAL/PROPRIETARY Compal Electronics, Inc.	
Issued Date		Deciphered Date		Title	
2016/01/01		2017/01/01		N16S Power GFX Core	
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	Document Number
					LA-EI52P
Date:	Thursday, November 10, 2016	Sheet	52	of	74
				Rev	1.0



<53> FBA_D[0..63] <<> FBA_D[0..63]
<53> FBA_EDC[0..7] <<> FBA_EDC[0..7]
<53> FBA_DB[0..7] <<> FBA_DB[0..7]
<53> FBA_CMD[0..31] <<> FBA_CMD[0..31]

GDDR5 CMD Mapping Table

NORMAL

UV17 N17#

NP=0 NP=1 NP=1 NP=0

FBA_EDC0 C2 EDC0
FBA_EDC1 C13 EDC1
FBA_EDC2 R13 EDC2
FBA_EDC3 R2 EDC3

FBA_DB0 D2 DB0#
FBA_DB1 D13 DB1#
FBA_DB2 P13 DB2#
FBA_DB3 P2 DB3#

<53> FBA_CLKA0 J12 CK
<53> FBA_CLKA0# J13 CK#

FBA_CMD2 H11 BA0/A2
FBA_CMD3 K10 BA1/A5
FBA_CMD4 K11 BA2/A4
FBA_CMD5 K11 BA3/A3

FBA_CMD6 K4 A8/A7
FBA_CMD7 H4 A9/A1
FBA_CMD8 H4 A10/A0
FBA_CMD9 J5 A11/A6
FBA_CMD10 J5 A12/RFU/NC

FBA_CMD11 H5 VPP/NC
FBA_CMD12 H5 VPP/NC

FBA_CMD13 J1 MF
FBA_CMD14 J13 SEN
FBA_CMD15 J13 ZQ

FBA_CMD16 J4 AB#
FBA_CMD17 G3 CAS#
FBA_CMD18 G12 WE#
FBA_CMD19 L3 RAS#
FBA_CMD20 L12 CS#

FBA_WCK01# D5 WCK01#
FBA_WCK02# D4 WCK02#
FBA_WCK03# P5 WCK03#
FBA_WCK04# P4 WCK04#

FBA_VREFD L A10 VREFD
FBA_VREFC L J14 VREFC

FBA_CMD13 J2 RESET#

H1 VSS
H2 VSS
H3 VSS
H4 VSS
H5 VSS
H6 VSS
H7 VSS
H8 VSS
H9 VSS
H10 VSS
H11 VSS
H12 VSS
H13 VSS
H14 VSS

G1 VDD
G2 VDD
G3 VDD
G4 VDD
G5 VDD
G6 VDD
G7 VDD
G8 VDD
G9 VDD
G10 VDD
G11 VDD
G12 VDD
G13 VDD
G14 VDD

L1 VDD
L2 VDD
L3 VDD
L4 VDD
L5 VDD
L6 VDD
L7 VDD
L8 VDD
L9 VDD
L10 VDD
L11 VDD
L12 VDD
L13 VDD
L14 VDD

P1 VSS
P2 VSS
P3 VSS
P4 VSS
P5 VSS
P6 VSS
P7 VSS
P8 VSS
P9 VSS
P10 VSS
P11 VSS
P12 VSS
P13 VSS
P14 VSS

R1 VSS
R2 VSS
R3 VSS
R4 VSS
R5 VSS
R6 VSS
R7 VSS
R8 VSS
R9 VSS
R10 VSS
R11 VSS
R12 VSS
R13 VSS
R14 VSS

U1 VSS
U2 VSS
U3 VSS
U4 VSS
U5 VSS
U6 VSS
U7 VSS
U8 VSS
U9 VSS
U10 VSS
U11 VSS
U12 VSS
U13 VSS
U14 VSS

V1 VSS
V2 VSS
V3 VSS
V4 VSS
V5 VSS
V6 VSS
V7 VSS
V8 VSS
V9 VSS
V10 VSS
V11 VSS
V12 VSS
V13 VSS
V14 VSS

W1 VSS
W2 VSS
W3 VSS
W4 VSS
W5 VSS
W6 VSS
W7 VSS
W8 VSS
W9 VSS
W10 VSS
W11 VSS
W12 VSS
W13 VSS
W14 VSS

X1 VSS
X2 VSS
X3 VSS
X4 VSS
X5 VSS
X6 VSS
X7 VSS
X8 VSS
X9 VSS
X10 VSS
X11 VSS
X12 VSS
X13 VSS
X14 VSS

Y1 VSS
Y2 VSS
Y3 VSS
Y4 VSS
Y5 VSS
Y6 VSS
Y7 VSS
Y8 VSS
Y9 VSS
Y10 VSS
Y11 VSS
Y12 VSS
Y13 VSS
Y14 VSS

Z1 VSS
Z2 VSS
Z3 VSS
Z4 VSS
Z5 VSS
Z6 VSS
Z7 VSS
Z8 VSS
Z9 VSS
Z10 VSS
Z11 VSS
Z12 VSS
Z13 VSS
Z14 VSS

AA1 VSS
AA2 VSS
AA3 VSS
AA4 VSS
AA5 VSS
AA6 VSS
AA7 VSS
AA8 VSS
AA9 VSS
AA10 VSS
AA11 VSS
AA12 VSS
AA13 VSS
AA14 VSS

AB1 VSS
AB2 VSS
AB3 VSS
AB4 VSS
AB5 VSS
AB6 VSS
AB7 VSS
AB8 VSS
AB9 VSS
AB10 VSS
AB11 VSS
AB12 VSS
AB13 VSS
AB14 VSS

AC1 VSS
AC2 VSS
AC3 VSS
AC4 VSS
AC5 VSS
AC6 VSS
AC7 VSS
AC8 VSS
AC9 VSS
AC10 VSS
AC11 VSS
AC12 VSS
AC13 VSS
AC14 VSS

AD1 VSS
AD2 VSS
AD3 VSS
AD4 VSS
AD5 VSS
AD6 VSS
AD7 VSS
AD8 VSS
AD9 VSS
AD10 VSS
AD11 VSS
AD12 VSS
AD13 VSS
AD14 VSS

AE1 VSS
AE2 VSS
AE3 VSS
AE4 VSS
AE5 VSS
AE6 VSS
AE7 VSS
AE8 VSS
AE9 VSS
AE10 VSS
AE11 VSS
AE12 VSS
AE13 VSS
AE14 VSS

AF1 VSS
AF2 VSS
AF3 VSS
AF4 VSS
AF5 VSS
AF6 VSS
AF7 VSS
AF8 VSS
AF9 VSS
AF10 VSS
AF11 VSS
AF12 VSS
AF13 VSS
AF14 VSS

AG1 VSS
AG2 VSS
AG3 VSS
AG4 VSS
AG5 VSS
AG6 VSS
AG7 VSS
AG8 VSS
AG9 VSS
AG10 VSS
AG11 VSS
AG12 VSS
AG13 VSS
AG14 VSS

AH1 VSS
AH2 VSS
AH3 VSS
AH4 VSS
AH5 VSS
AH6 VSS
AH7 VSS
AH8 VSS
AH9 VSS
AH10 VSS
AH11 VSS
AH12 VSS
AH13 VSS
AH14 VSS

AI1 VSS
AI2 VSS
AI3 VSS
AI4 VSS
AI5 VSS
AI6 VSS
AI7 VSS
AI8 VSS
AI9 VSS
AI10 VSS
AI11 VSS
AI12 VSS
AI13 VSS
AI14 VSS

AJ1 VSS
AJ2 VSS
AJ3 VSS
AJ4 VSS
AJ5 VSS
AJ6 VSS
AJ7 VSS
AJ8 VSS
AJ9 VSS
AJ10 VSS
AJ11 VSS
AJ12 VSS
AJ13 VSS
AJ14 VSS

AK1 VSS
AK2 VSS
AK3 VSS
AK4 VSS
AK5 VSS
AK6 VSS
AK7 VSS
AK8 VSS
AK9 VSS
AK10 VSS
AK11 VSS
AK12 VSS
AK13 VSS
AK14 VSS

AL1 VSS
AL2 VSS
AL3 VSS
AL4 VSS
AL5 VSS
AL6 VSS
AL7 VSS
AL8 VSS
AL9 VSS
AL10 VSS
AL11 VSS
AL12 VSS
AL13 VSS
AL14 VSS

AM1 VSS
AM2 VSS
AM3 VSS
AM4 VSS
AM5 VSS
AM6 VSS
AM7 VSS
AM8 VSS
AM9 VSS
AM10 VSS
AM11 VSS
AM12 VSS
AM13 VSS
AM14 VSS

AN1 VSS
AN2 VSS
AN3 VSS
AN4 VSS
AN5 VSS
AN6 VSS
AN7 VSS
AN8 VSS
AN9 VSS
AN10 VSS
AN11 VSS
AN12 VSS
AN13 VSS
AN14 VSS

AO1 VSS
AO2 VSS
AO3 VSS
AO4 VSS
AO5 VSS
AO6 VSS
AO7 VSS
AO8 VSS
AO9 VSS
AO10 VSS
AO11 VSS
AO12 VSS
AO13 VSS
AO14 VSS

AP1 VSS
AP2 VSS
AP3 VSS
AP4 VSS
AP5 VSS
AP6 VSS
AP7 VSS
AP8 VSS
AP9 VSS
AP10 VSS
AP11 VSS
AP12 VSS
AP13 VSS
AP14 VSS

AQ1 VSS
AQ2 VSS
AQ3 VSS
AQ4 VSS
AQ5 VSS
AQ6 VSS
AQ7 VSS
AQ8 VSS
AQ9 VSS
AQ10 VSS
AQ11 VSS
AQ12 VSS
AQ13 VSS
AQ14 VSS

AR1 VSS
AR2 VSS
AR3 VSS
AR4 VSS
AR5 VSS
AR6 VSS
AR7 VSS
AR8 VSS
AR9 VSS
AR10 VSS
AR11 VSS
AR12 VSS
AR13 VSS
AR14 VSS

AS1 VSS
AS2 VSS
AS3 VSS
AS4 VSS
AS5 VSS
AS6 VSS
AS7 VSS
AS8 VSS
AS9 VSS
AS10 VSS
AS11 VSS
AS12 VSS
AS13 VSS
AS14 VSS

AT1 VSS
AT2 VSS
AT3 VSS
AT4 VSS
AT5 VSS
AT6 VSS
AT7 VSS
AT8 VSS
AT9 VSS
AT10 VSS
AT11 VSS
AT12 VSS
AT13 VSS
AT14 VSS

AU1 VSS
AU2 VSS
AU3 VSS
AU4 VSS
AU5 VSS
AU6 VSS
AU7 VSS
AU8 VSS
AU9 VSS
AU10 VSS
AU11 VSS
AU12 VSS
AU13 VSS
AU14 VSS

AV1 VSS
AV2 VSS
AV3 VSS
AV4 VSS
AV5 VSS
AV6 VSS
AV7 VSS
AV8 VSS
AV9 VSS
AV10 VSS
AV11 VSS
AV12 VSS
AV13 VSS
AV14 VSS

AW1 VSS
AW2 VSS
AW3 VSS
AW4 VSS
AW5 VSS
AW6 VSS
AW7 VSS
AW8 VSS
AW9 VSS
AW10 VSS
AW11 VSS
AW12 VSS
AW13 VSS
AW14 VSS

AX1 VSS
AX2 VSS
AX3 VSS
AX4 VSS
AX5 VSS
AX6 VSS
AX7 VSS
AX8 VSS
AX9 VSS
AX10 VSS
AX11 VSS
AX12 VSS
AX13 VSS
AX14 VSS

AY1 VSS
AY2 VSS
AY3 VSS
AY4 VSS
AY5 VSS
AY6 VSS
AY7 VSS
AY8 VSS
AY9 VSS
AY10 VSS
AY11 VSS
AY12 VSS
AY13 VSS
AY14 VSS

AZ1 VSS
AZ2 VSS
AZ3 VSS
AZ4 VSS
AZ5 VSS
AZ6 VSS
AZ7 VSS
AZ8 VSS
AZ9 VSS
AZ10 VSS
AZ11 VSS
AZ12 VSS
AZ13 VSS
AZ14 VSS

BA1 VSS
BA2 VSS
BA3 VSS
BA4 VSS
BA5 VSS
BA6 VSS
BA7 VSS
BA8 VSS
BA9 VSS
BA10 VSS
BA11 VSS
BA12 VSS
BA13 VSS
BA14 VSS

BB1 VSS
BB2 VSS
BB3 VSS
BB4 VSS
BB5 VSS
BB6 VSS
BB7 VSS
BB8 VSS
BB9 VSS
BB10 VSS
BB11 VSS
BB12 VSS
BB13 VSS
BB14 VSS

BC1 VSS
BC2 VSS
BC3 VSS
BC4 VSS
BC5 VSS
BC6 VSS
BC7 VSS
BC8 VSS
BC9 VSS
BC10 VSS
BC11 VSS
BC12 VSS
BC13 VSS
BC14 VSS

BD1 VSS
BD2 VSS
BD3 VSS
BD4 VSS
BD5 VSS
BD6 VSS
BD7 VSS
BD8 VSS
BD9 VSS
BD10 VSS
BD11 VSS
BD12 VSS
BD13 VSS
BD14 VSS

BE1 VSS
BE2 VSS
BE3 VSS
BE4 VSS
BE5 VSS
BE6 VSS
BE7 VSS
BE8 VSS
BE9 VSS
BE10 VSS
BE11 VSS
BE12 VSS
BE13 VSS
BE14 VSS

BF1 VSS
BF2 VSS
BF3 VSS
BF4 VSS
BF5 VSS
BF6 VSS
BF7 VSS
BF8 VSS
BF9 VSS
BF10 VSS
BF11 VSS
BF12 VSS
BF13 VSS
BF14 VSS

BG1 VSS
BG2 VSS
BG3 VSS
BG4 VSS
BG5 VSS
BG6 VSS
BG7 VSS
BG8 VSS
BG9 VSS
BG10 VSS
BG11 VSS
BG12 VSS
BG13 VSS
BG14 VSS

BH1 VSS
BH2 VSS
BH3 VSS
BH4 VSS
BH5 VSS
BH6 VSS
BH7 VSS
BH8 VSS
BH9 VSS
BH10 VSS
BH11 VSS
BH12 VSS
BH13 VSS
BH14 VSS

BI1 VSS
BI2 VSS
BI3 VSS
BI4 VSS
BI5 VSS
BI6 VSS
BI7 VSS
BI8 VSS
BI9 VSS
BI10 VSS
BI11 VSS
BI12 VSS
BI13 VSS
BI14 VSS

BJ1 VSS
BJ2 VSS
BJ3 VSS
BJ4 VSS
BJ5 VSS
BJ6 VSS
BJ7 VSS
BJ8 VSS
BJ9 VSS
BJ10 VSS
BJ11 VSS
BJ12 VSS
BJ13 VSS
BJ14 VSS

BK1 VSS
BK2 VSS
BK3 VSS
BK4 VSS
BK5 VSS
BK6 VSS
BK7 VSS
BK8 VSS
BK9 VSS
BK10 VSS
BK11 VSS
BK12 VSS
BK13 VSS
BK14 VSS

BL1 VSS
BL2 VSS
BL3 VSS
BL4 VSS
BL5 VSS
BL6 VSS
BL7 VSS
BL8 VSS
BL9 VSS
BL10 VSS
BL11 VSS
BL12 VSS
BL13 VSS
BL14 VSS

BM1 VSS
BM2 VSS
BM3 VSS
BM4 VSS
BM5 VSS
BM6 VSS
BM7 VSS
BM8 VSS
BM9 VSS
BM10 VSS
BM11 VSS
BM12 VSS
BM13 VSS
BM14 VSS

BN1 VSS
BN2 VSS
BN3 VSS
BN4 VSS
BN5 VSS
BN6 VSS
BN7 VSS
BN8 VSS
BN9 VSS
BN10 VSS
BN11 VSS
BN12 VSS
BN13 VSS
BN14 VSS

BO1 VSS
BO2 VSS
BO3 VSS
BO4 VSS
BO5 VSS
BO6 VSS
BO7 VSS
BO8 VSS
BO9 VSS
BO10 VSS
BO11 VSS
BO12 VSS
BO13 VSS
BO14 VSS

BP1 VSS
BP2 VSS
BP3 VSS
BP4 VSS
BP5 VSS
BP6 VSS
BP7 VSS
BP8 VSS
BP9 VSS
BP10 VSS
BP11 VSS
BP12 VSS
BP13 VSS
BP14 VSS

BQ1 VSS
BQ2 VSS
BQ3 VSS
BQ4 VSS
BQ5 VSS
BQ6 VSS
BQ7 VSS
BQ8 VSS
BQ9 VSS
BQ10 VSS
BQ11 VSS
BQ12 VSS
BQ13 VSS
BQ14 VSS

BR1 VSS
BR2 VSS
BR3 VSS
BR4 VSS
BR5 VSS
BR6 VSS
BR7 VSS
BR8 VSS
BR9 VSS
BR10 VSS
BR11 VSS
BR12 VSS
BR13 VSS
BR14 VSS

BS1 VSS
BS2 VSS
BS3 VSS
BS4 VSS
BS5 VSS
BS6 VSS
BS7 VSS
BS8 VSS
BS9 VSS
BS10 VSS
BS11 VSS
BS12 VSS
BS13 VSS
BS14 VSS

BT1 VSS
BT2 VSS
BT3 VSS
BT4 VSS
BT5 VSS
BT6 VSS
BT7 VSS
BT8 VSS
BT9 VSS
BT10 VSS
BT11 VSS
BT12 VSS
BT13 VSS
BT14 VSS

BU1 VSS
BU2 VSS
BU3 VSS
BU4 VSS
BU5 VSS
BU6 VSS
BU7 VSS
BU8 VSS
BU9 VSS
BU10 VSS
BU11 VSS
BU12 VSS
BU13 VSS
BU14 VSS

BV1 VSS
BV2 VSS
BV3 VSS
BV4 VSS
BV5 VSS
BV6 VSS
BV7 VSS
BV8 VSS
BV9 VSS
BV10 VSS
BV11 VSS
BV12 VSS
BV13 VSS
BV14 VSS

BW1 VSS
BW2 VSS
BW3 VSS
BW4 VSS
BW5 VSS
BW6 VSS
BW7 VSS
BW8 VSS
BW9 VSS
BW10 VSS
BW11 VSS
BW12 VSS
BW13 VSS
BW14 VSS

BX1 VSS
BX2 VSS
BX3 VSS
BX4 VSS
BX5 VSS
BX6 VSS
BX7 VSS
BX8 VSS
BX9 VSS
BX10 VSS
BX11 VSS
BX12 VSS
BX13 VSS
BX14 VSS

BY1 VSS
BY2 VSS
BY3 VSS
BY4 VSS
BY5 VSS
BY6 VSS
BY7 VSS
BY8 VSS
BY9 VSS
BY10 VSS
BY11 VSS
BY12 VSS
BY13 VSS
BY14 VSS

BZ1 VSS
BZ2 VSS
BZ3 VSS
BZ4 VSS
BZ5 VSS
BZ6 VSS
BZ7 VSS
BZ8 VSS
BZ9 VSS
BZ10 VSS
BZ11 VSS
BZ12 VSS
BZ13 VSS
BZ14 VSS

CA1 VSS
CA2 VSS
CA3 VSS
CA4 VSS
CA5 VSS
CA6 VSS
CA7 VSS
CA8 VSS
CA9 VSS
CA10 VSS
CA11 VSS
CA12 VSS
CA13 VSS
CA14 VSS

CB1 VSS
CB2 VSS
CB3 VSS
CB4 VSS
CB5 VSS
CB6 VSS
CB7 VSS
CB8 VSS
CB9 VSS
CB10 VSS
CB11 VSS
CB12 VSS
CB13 VSS
CB14 VSS

CC1 VSS
CC2 VSS
CC3 VSS
CC4 VSS
CC5 VSS
CC6 VSS
CC7 VSS
CC8 VSS
CC9 VSS
CC10 VSS
CC11 VSS
CC12 VSS
CC13 VSS
CC14 VSS

CD1 VSS
CD2 VSS
CD3 VSS
CD4 VSS
CD5 VSS
CD6 VSS
CD7 VSS
CD8 VSS
CD9 VSS
CD10 VSS
CD11 VSS
CD12 VSS
CD13 VSS
CD14 VSS

CE1 VSS
CE2 VSS
CE3 VSS
CE4 VSS
CE5 VSS
CE6 VSS
CE7 VSS
CE8 VSS
CE9 VSS
CE10 VSS
CE11 VSS
CE12 VSS
CE13 VSS
CE14 VSS

CF1 VSS
CF2 VSS
CF3 VSS
CF4 VSS
CF5 VSS
CF6 VSS
CF7 VSS
CF8 VSS
CF9 VSS
CF10 VSS
CF11 VSS
CF12 VSS
CF13 VSS
CF14 VSS

CG1 VSS
CG2 VSS
CG3 VSS
CG4 VSS
CG5 VSS
CG6 VSS
CG7 VSS
CG8 VSS
CG9 VSS
CG10 VSS
CG11 VSS
CG12 VSS
CG13 VSS
CG14 VSS

CH1 VSS
CH2 VSS
CH3 VSS
CH4 VSS
CH5 VSS
CH6 VSS
CH7 VSS
CH8 VSS
CH9 VSS
CH10 VSS
CH11 VSS
CH12 VSS
CH13 VSS
CH14 VSS

CI1 VSS
CI2 VSS
CI3 VSS
CI4 VSS
CI5 VSS
CI6 VSS
CI7 VSS
CI8 VSS
CI9 VSS
CI10 VSS
CI11 VSS
CI12 VSS
CI13 VSS
CI14 VSS

CJ1 VSS
CJ2 VSS
CJ3 VSS
CJ4 VSS
CJ5 VSS
CJ6 VSS
CJ7 VSS
CJ8 VSS
CJ9 VSS
CJ10 VSS
CJ11 VSS
CJ12 VSS
CJ13 VSS
CJ14 VSS

CK1 VSS
CK2 VSS
CK3 VSS
CK4 VSS
CK5 VSS
CK6 VSS
CK7 VSS
CK8 VSS
CK9 VSS
CK10 VSS
CK11 VSS
CK12 VSS
CK13 VSS
CK14 VSS

CL1 VSS
CL2 VSS
CL3 VSS
CL4 VSS
CL5 VSS
CL6 VSS
CL7 VSS
CL8 VSS
CL9 VSS
CL10 VSS
CL11 VSS
CL12 VSS
CL13 VSS
CL14 VSS

CM1 VSS
CM2 VSS
CM3 VSS
CM4 VSS
CM5 VSS
CM6 VSS
CM7 VSS
CM8 VSS
CM9 VSS
CM10 VSS
CM11 VSS
CM12 VSS
CM13 VSS
CM14 VSS

CN1 VSS
CN2 VSS
CN3 VSS
CN4 VSS
CN5 VSS
CN6 VSS
CN7 VSS
CN8 VSS
CN9 VSS
CN10 VSS
CN11 VSS
CN12 VSS
CN13 VSS
CN14 VSS

CO1 VSS
CO2 VSS
CO3 VSS
CO4 VSS
CO5 VSS
CO6 VSS
CO7 VSS
CO8 VSS
CO9 VSS
CO10 VSS
CO11 VSS
CO12 VSS
CO13 VSS
CO14 VSS

CP1 VSS
CP2 VSS
CP3 VSS
CP4 VSS
CP5 VSS
CP6 VSS
CP7 VSS
CP8 VSS
CP9 VSS
CP10 VSS
CP11 VSS
CP12 VSS
CP13 VSS
CP14 VSS

CQ1 VSS
CQ2 VSS
CQ3 VSS
CQ4 VSS
CQ5 VSS
CQ6 VSS
CQ7 VSS
CQ8 VSS
CQ9 VSS
CQ10 VSS
CQ11 VSS
CQ12 VSS
CQ13 VSS
CQ14 VSS

CR1 VSS
CR2 VSS
CR3 VSS
CR4 VSS
CR5 VSS
CR6 VSS
CR7 VSS
CR8 VSS
CR9 VSS
CR10 VSS
CR11 VSS
CR12 VSS
CR13 VSS
CR14 VSS

CS1 VSS
CS2 VSS
CS3 VSS
CS4 VSS
CS5 VSS
CS6 VSS
CS7 VSS
CS8 VSS
CS9 VSS
CS10 VSS
CS11 VSS
CS12 VSS
CS13 VSS
CS14 VSS

CT1 VSS
CT2 VSS
CT3 VSS
CT4 VSS
CT5 VSS
CT6 VSS
CT7 VSS
CT8 VSS
CT9 VSS
CT10 VSS
CT11 VSS
CT12 VSS
CT13 VSS
CT14 VSS

CU1 VSS
CU2 VSS
CU3 VSS
CU4 VSS
CU5 VSS
CU6 VSS
CU7 VSS
CU8 VSS
CU9 VSS
CU10 VSS
CU11 VSS
CU12 VSS
CU13 VSS
CU14 VSS

CV1 VSS
CV2 VSS
CV3 VSS
CV4 VSS
CV5 VSS
CV6 VSS
CV7 VSS
CV8 VSS
CV9 VSS
CV10 VSS
CV11 VSS
CV12 VSS
CV13 VSS
CV14 VSS

CW1 VSS
CW2 VSS
CW3 VSS
CW4 VSS
CW5 VSS
CW6 VSS
CW7 VSS
CW8 VSS
CW9 VSS
CW10 VSS
CW11 VSS
CW12 VSS
CW13 VSS
CW14 VSS

CX1 VSS
CX2 VSS
CX3 VSS
CX4 VSS
CX5 VSS
CX6 VSS
CX7 VSS
CX8 VSS
CX9 VSS
CX10 VSS
CX11 VSS
CX12 VSS
CX13 VSS
CX14 VSS

CY1 VSS
CY2 VSS
CY3 VSS
CY4 VSS
CY5 VSS
CY6 VSS
CY7 VSS
CY8 VSS
CY9 VSS
CY10 VSS
CY11 VSS
CY12 VSS
CY13 VSS
CY14 VSS

CZ1 VSS
CZ2 VSS
CZ3 VSS
CZ4 VSS
CZ5 VSS
CZ6 VSS
CZ7 VSS
CZ8 VSS
CZ9 VSS
CZ10 VSS
CZ11 VSS
CZ12 VSS
CZ13 VSS
CZ14 VSS

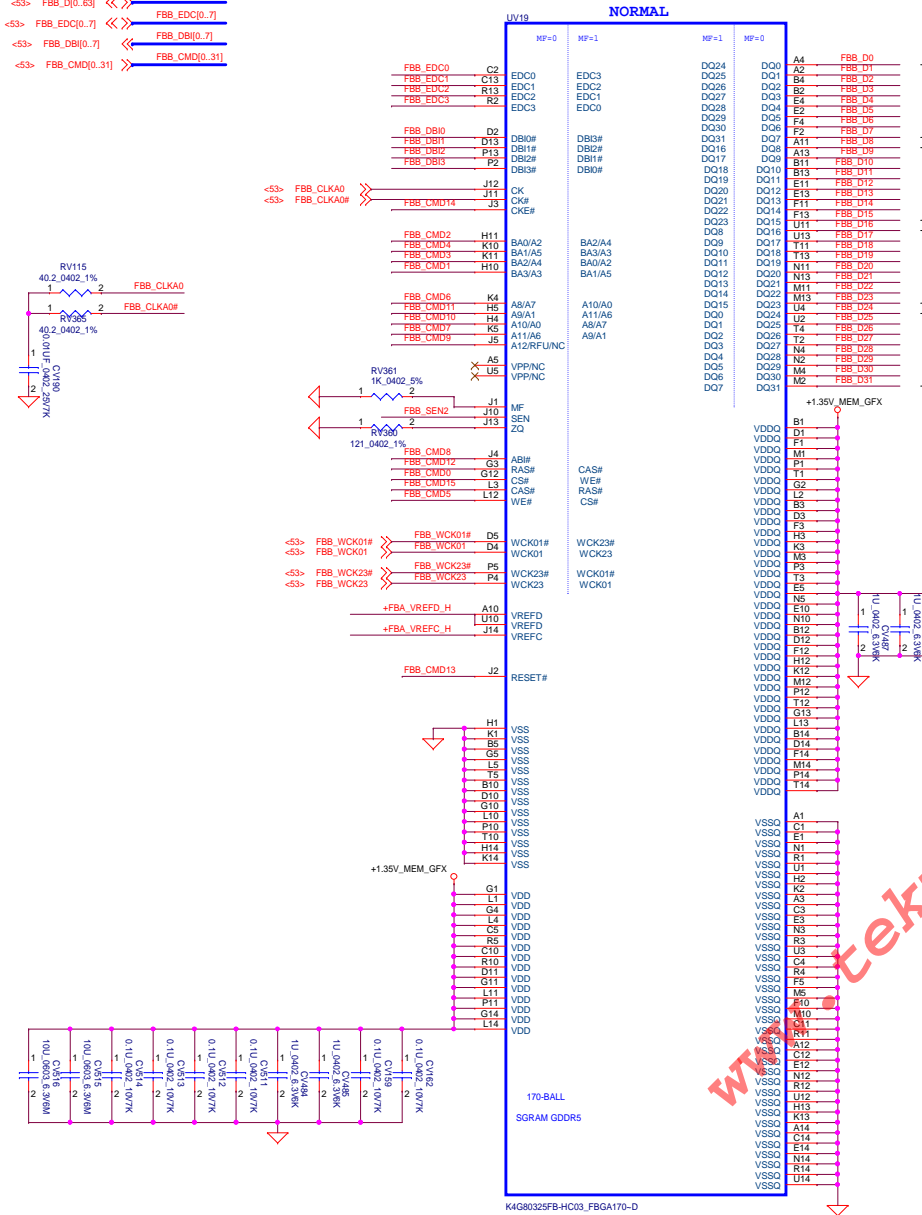
DA1 VSS
DA2 VSS
DA3 VSS
DA4 VSS
DA5 VSS
DA6 VSS
DA7 VSS
DA8 VSS
DA9 VSS
DA10 VSS
DA11 VSS
DA12 VSS
DA13 VSS
DA14 VSS

DB1 VSS
DB2 VSS
DB3 VSS
DB4 VSS
DB5 VSS
DB6 VSS
DB7 VSS
DB8 VSS
DB9 VSS
DB10 VSS
DB11 VSS
DB12 VSS
DB13 VSS
DB14 VSS

DC1 VSS
DC2 VSS
DC3 VSS
DC4 VSS
DC5 VSS
DC6 VSS
DC7 VSS
DC8 VSS
DC9 VSS
DC10 VSS
DC11 VSS
DC12 VSS
DC13 VSS
DC14 VSS

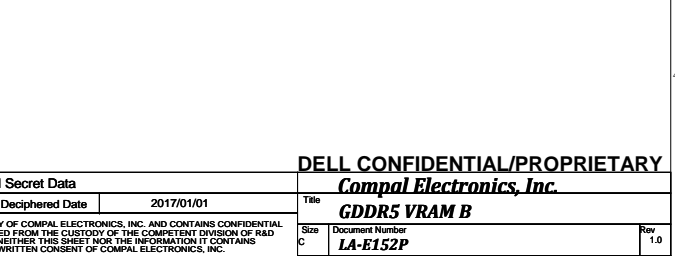
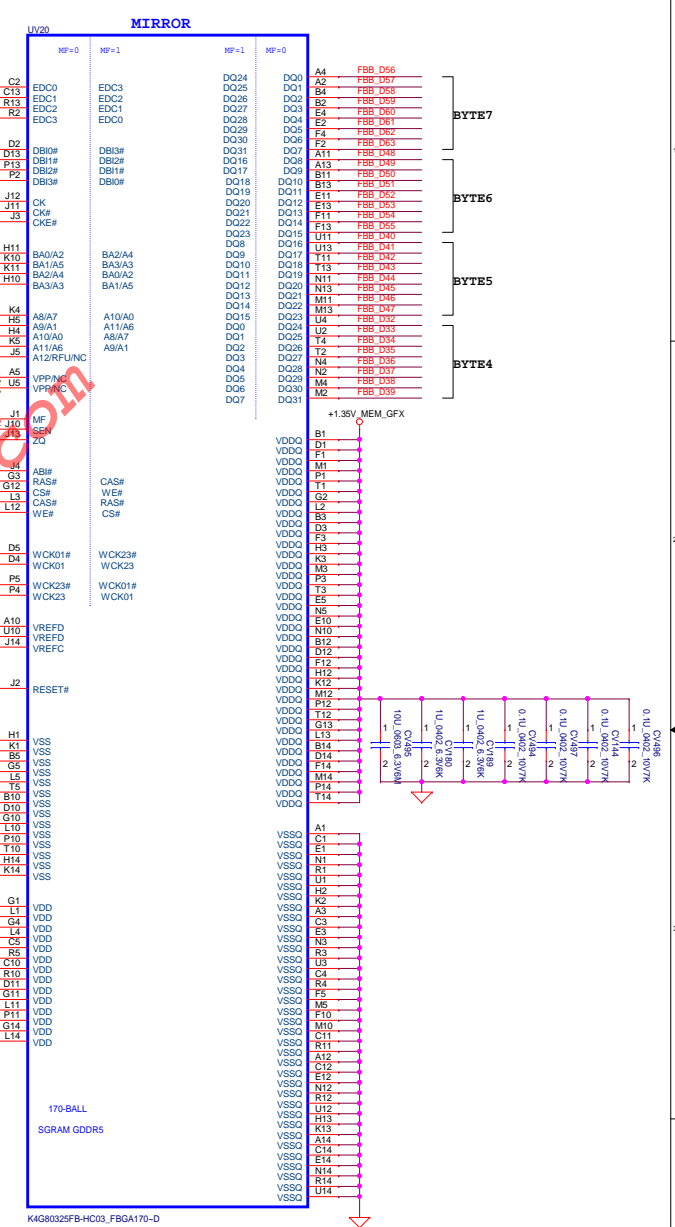
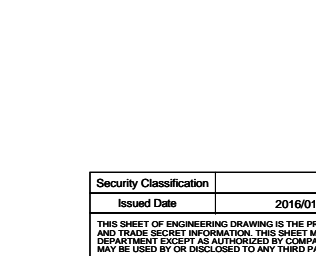
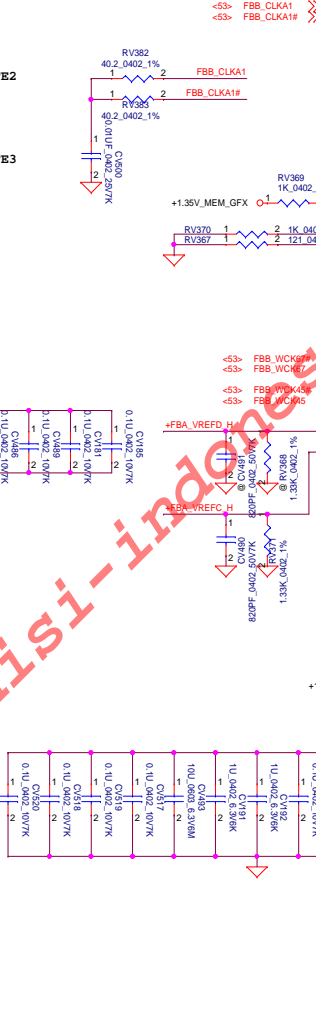
GDDR5 CMD Mapping Table

<53> FBB_D[0..63] <<>> FBB_D[0..63]
 <53> FBB_EDC[0..7] <<>> FBB_EDC[0..7]
 <53> FBB_DB[0..7] <<>> FBB_DB[0..7]
 <53> FBB_CMD[0..31] <<>> FBB_CMD[0..31]

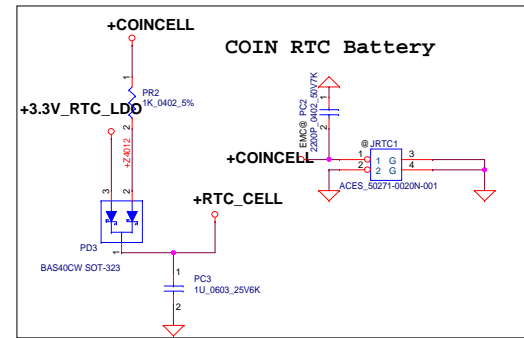
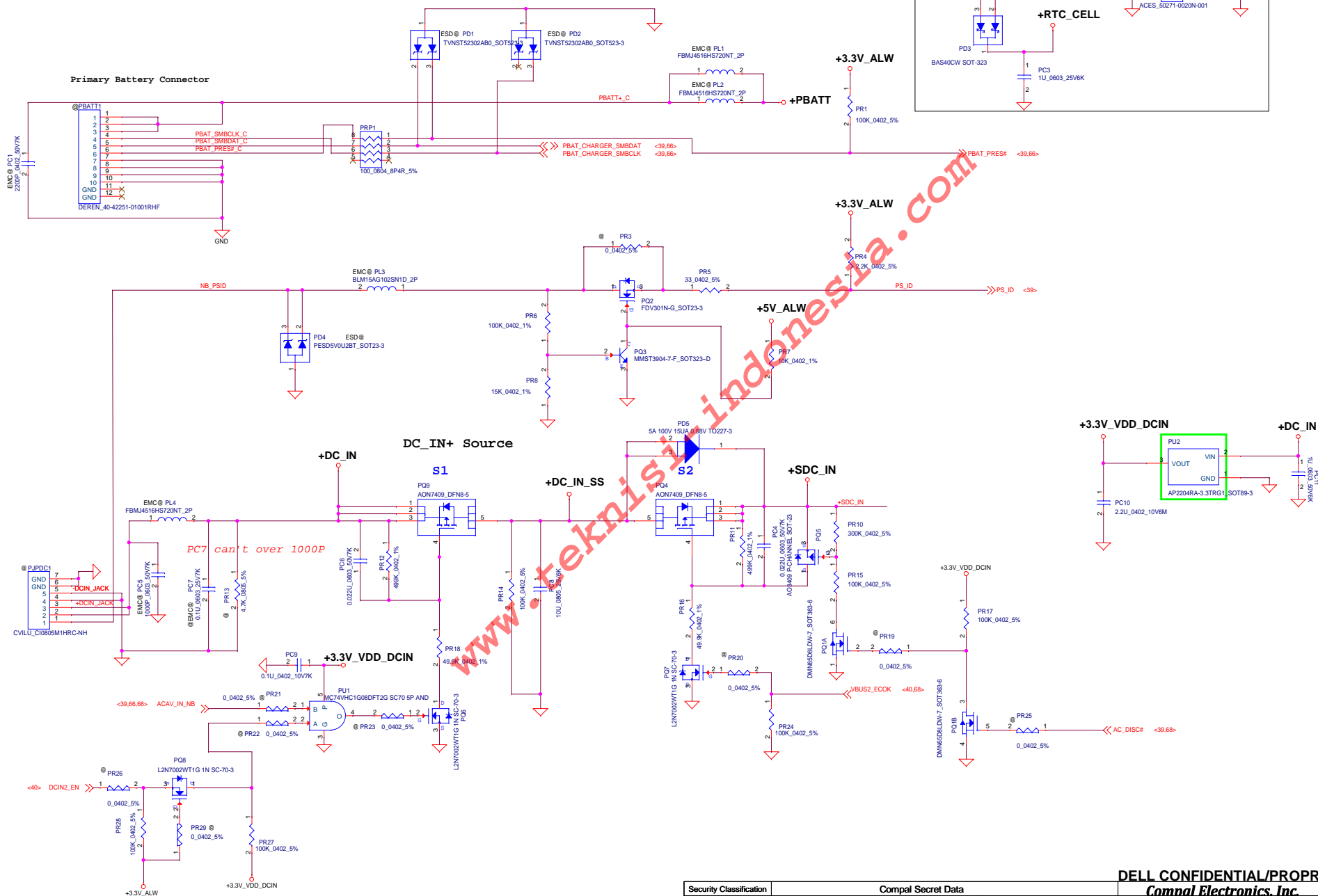


<0..31> <32..63> Memory

CMD#	CS#
CMD0	A3 BA3
CMD1	A2 BA0
CMD2	A4 BA2
CMD3	A5 BA1
CMD4	WE#
CMD5	A7 A8
CMD6	A6 A11
CMD7	A5#
CMD8	A12 FRU
CMD9	A0 A10
CMD10	A1 A9
CMD11	RA#
CMD12	RA#
CMD13	RA#
CMD14	CK#
CMD15	CA#

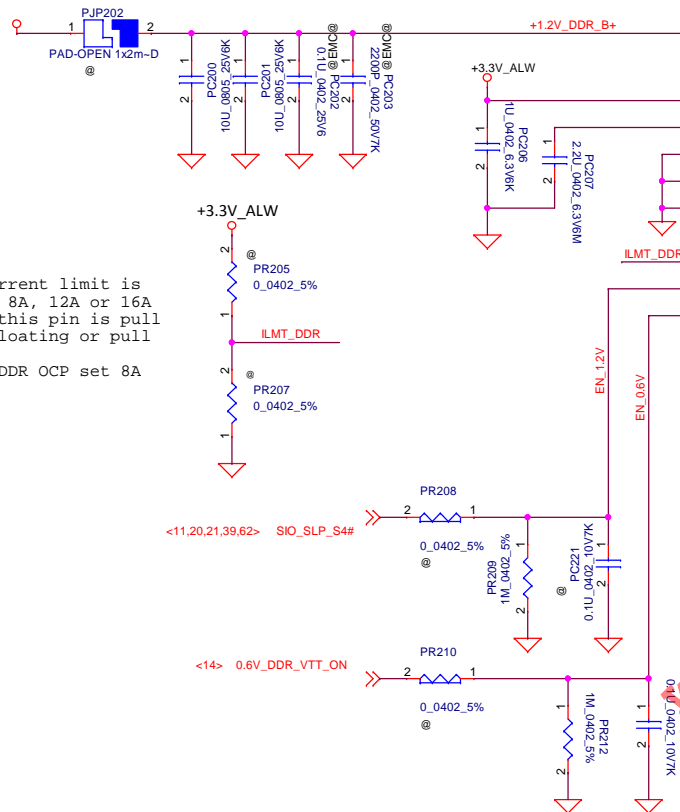




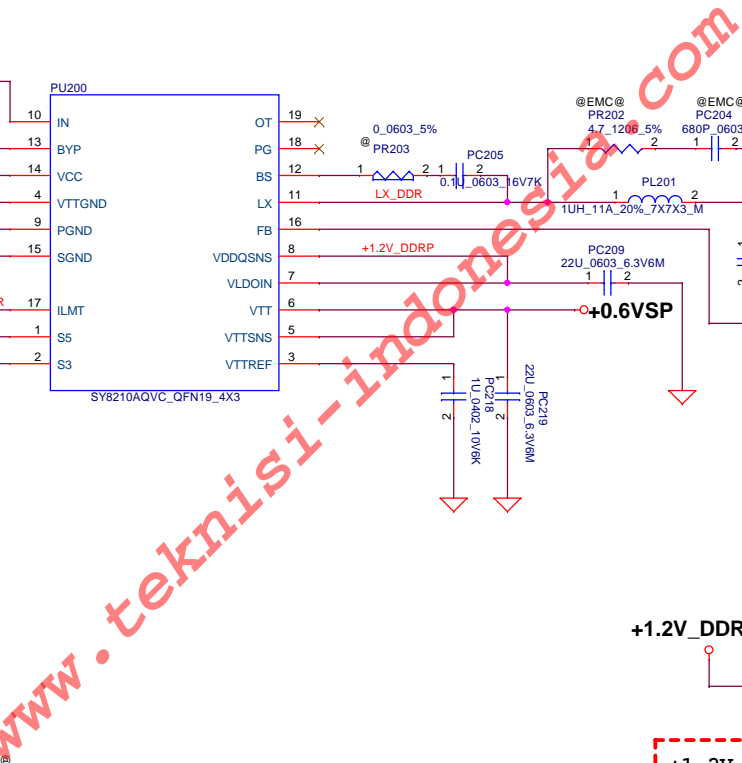


Security Classification		Compal Secret Data		Title	
Issued Date		Deciphered Date		+DCIN	
2016/01/01		2017/01/01		Size	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM 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	
				LA-E152P	
				Date:	
				Thursday, November 10, 2016	
				Sheet	
				57 of 74	
				Rev	
				1.0	

+PWR_SRC

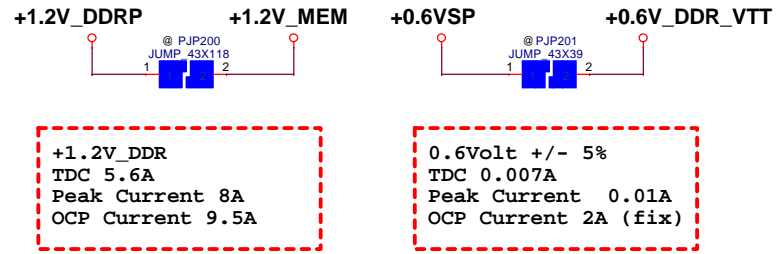


The current limit is set to 8A, 12A or 16A when this pin is pull low, floating or pull high
+1.2V_DDR OCP set 8A



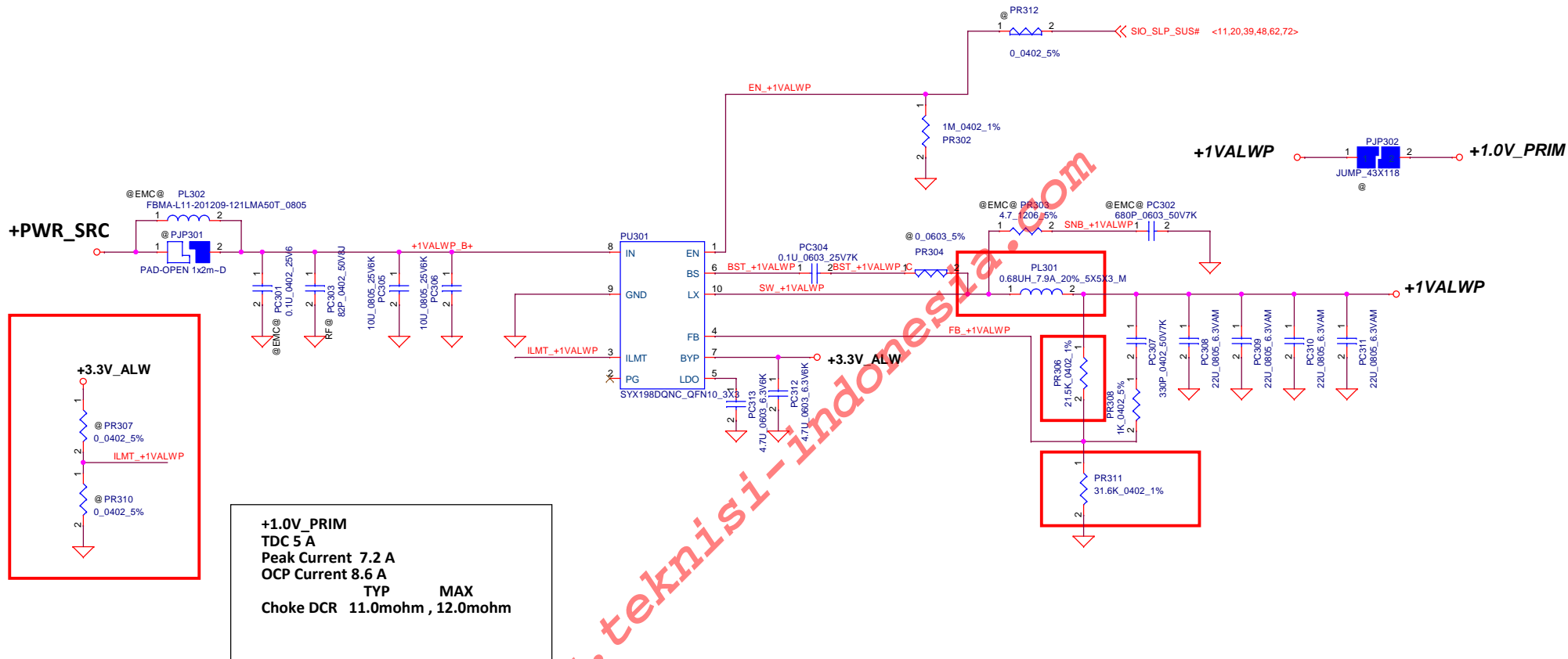
Mode	S3	S5	VOUT	VIT
Normal	H	H	on	on
Stadby	L	H	on	off
Shutdown	L	L	off	off

Note: S3 - sleep ; S5 - power off



+1.2V_DDR
TDC 5.6A
Peak Current 8A
OCP Current 9.5A

0.6Volt +/- 5%
TDC 0.007A
Peak Current 0.01A
OCP Current 2A (fix)



The current limit is set to 8A, 12A or 16A when this pin is pull low, floating or pull high

www.teknisi-indonesia.com

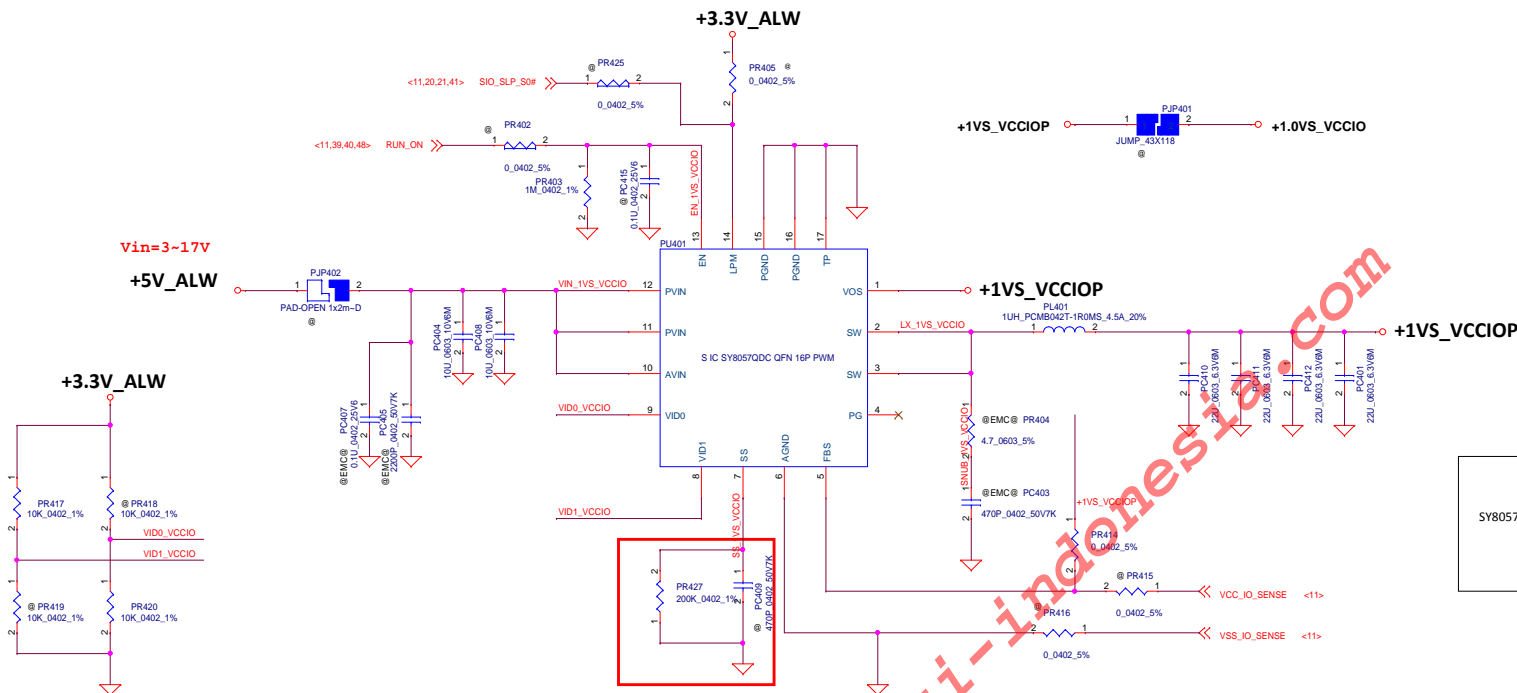
DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title
+1VALWP

Size	Document Number	Rev
Custom	LA-E152P	1.0
Date:	Thursday, November 10, 2016	Sheet 60 of 74

Security Classification	Compal Secret Data		
Issued Date	2016/01/01	Deciphered Date	2017/01/01
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.			



+1.0VS_VCCIO
TDC 3.9A
Peak Current 5.5 A
OCP Current 6.6 A Fix by IC
TYP MAX

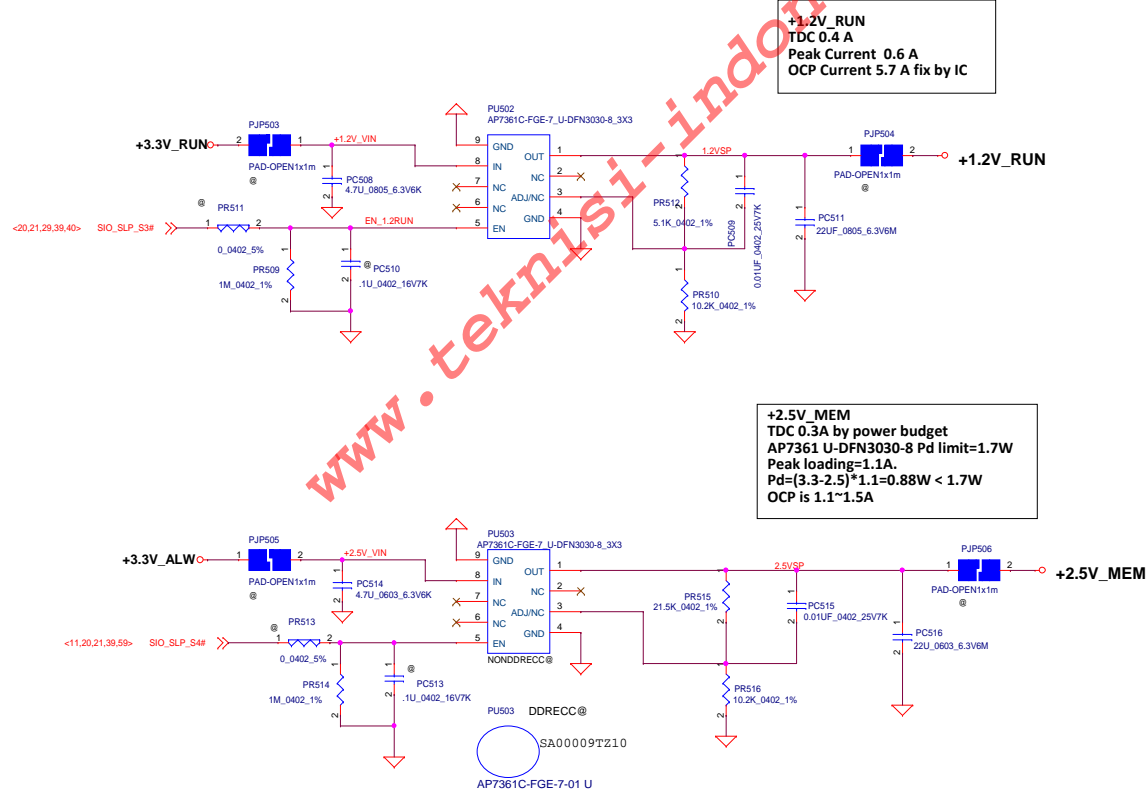
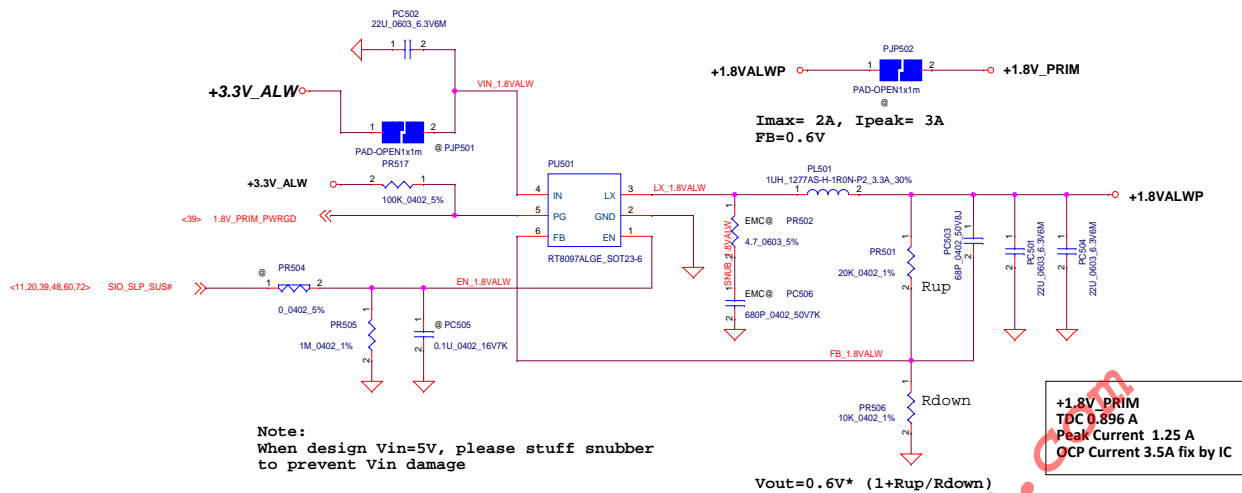
	LPM LOGIC	VID1 LOGIC	VID0 LOGIC	OUTPUT VOLTAGE
SY8057	0	X	X	0(LPM)
	1	0	0	0.85
	1	0	1	0.875
	1	1	0	0.95
	1	1	1	0.975

Preset the different pull down resistor to choose the required power rail

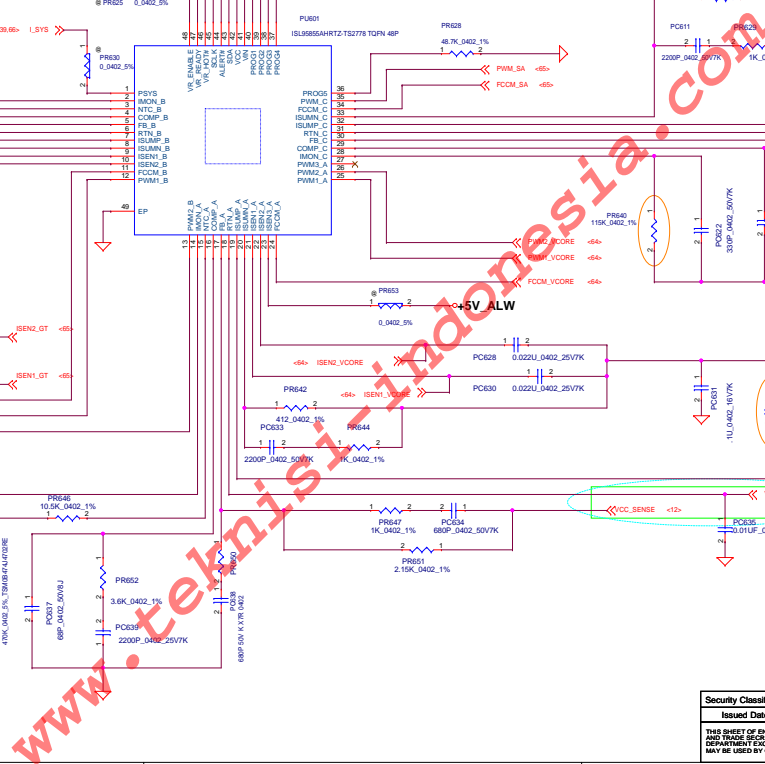
(VCCIO/PCH/EDRAM/EOPIO applications.)
RMODE>500k or floating Vcc_PRIM_CORE.
RMODE=200k Vcc_IO.
RMODE=0 Vcc_EDRAM.

Security Classification	Compal Secret Data		
Issued Date	2016/01/01	Deciphered Date	2017/01/01
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.			

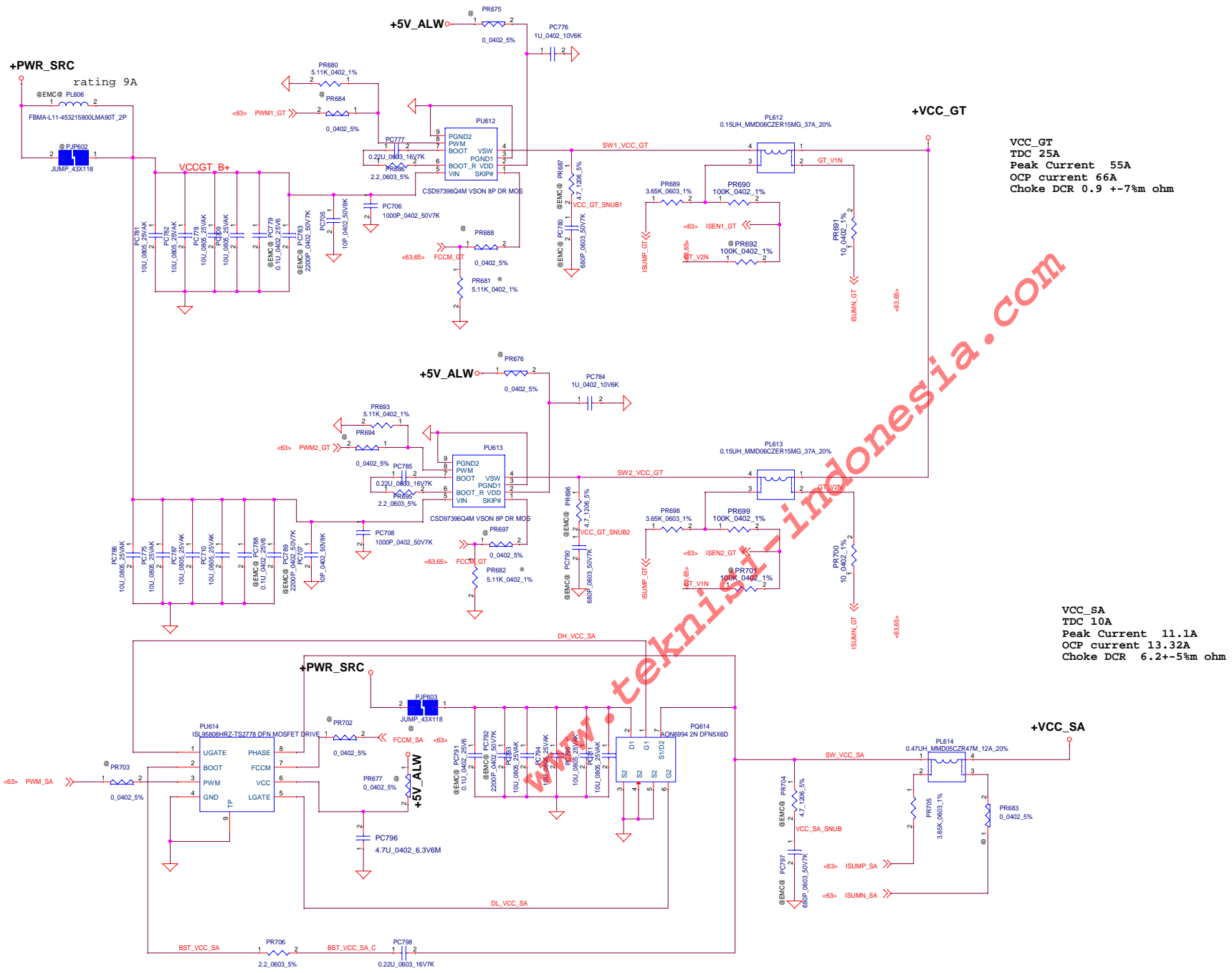
DELL CONFIDENTIAL/PROPRIETARY			
Compal Electronics, Inc.			
Title	+1VS_VCCIO		
Size	Document Number	Rev	
C	LA-E152P	1.0	
Date:	Thursday, November 10, 2016	Sheet	61 of 74



Security Classification		Compal Secret Data	
Issued Date	2016/01/01	Deciphered Date	2017/01/01
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.			
Title		DELL CONFIDENTIAL/PROPRIETARY Compal Electronics, Inc. +1.8VALWP/+1.5VSP/2.5V_MEN	
Size	Document Number	Rev	
C	LA-E152P	1.0	
Date		Thursday, November 10, 2016	
Sheet		62 of 74	



Security Classification		Compul Secret Data		Title	
Issued Date		Deciphered Date		2017/01/01	
2016/01/01		Deciphered Date		2017/01/01	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL INFORMATION. THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF COMPAL ELECTRONICS, INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF COMPAL ELECTRONICS, INC.				Title VCORE JSL9S855	
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 THE WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Date LA-E152P	
Date December, November 15, 2016				Size 15mm 63 of 74	

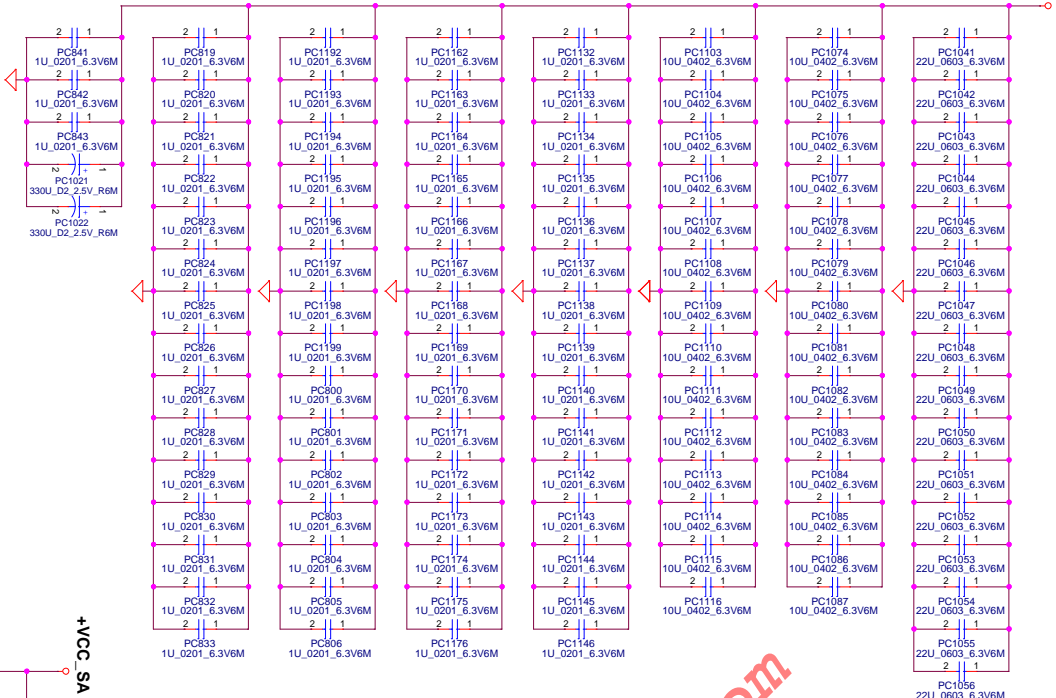


VCC_GT
TDC 25A
Peak Current 55A
OCF current 66A
Choke DCR 0.9 +-7% ohm

VCC_SA
TDC 10A
Peak Current 11.1A
OCF current 13.32A
Choke DCR 6.2+-5% ohm

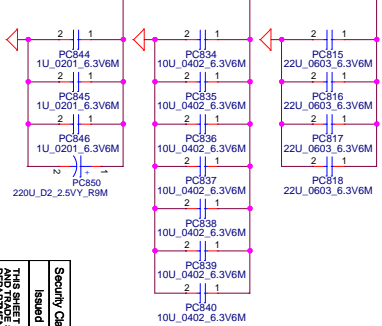
VCC CORE Place on CPU
Back Side:
220_0603 * 8 pcs + 10U_0402*28 pcs + 1U_0201*35 pcs
Primary Side:
220_0603 * 8 pcs+330U_D2*2 pcs

+VCC CORE



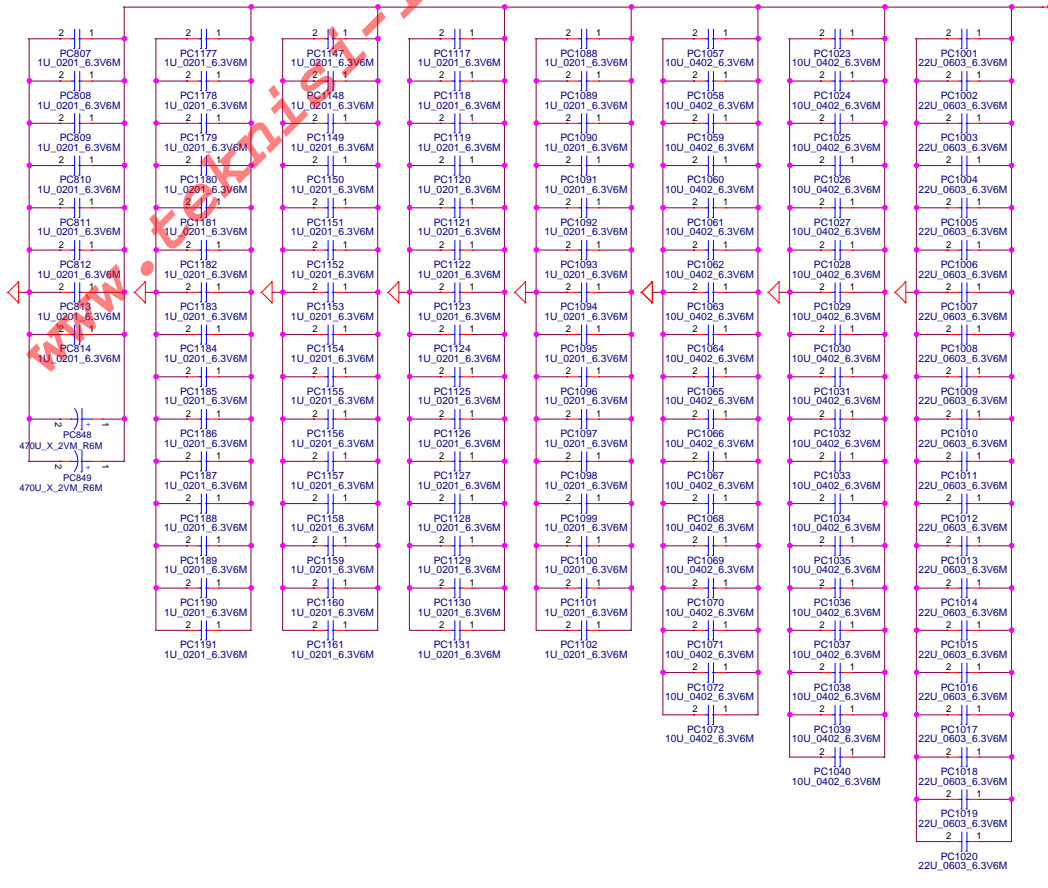
VCC SA Place on CPU
Back Side:
220_0603 * 2 pcs + 10U_0402*7 pcs + 1U_0201*3 pcs
Primary Side:
220_0603 * 2 pcs + 220U_D2*1 pcs

+VCC SA

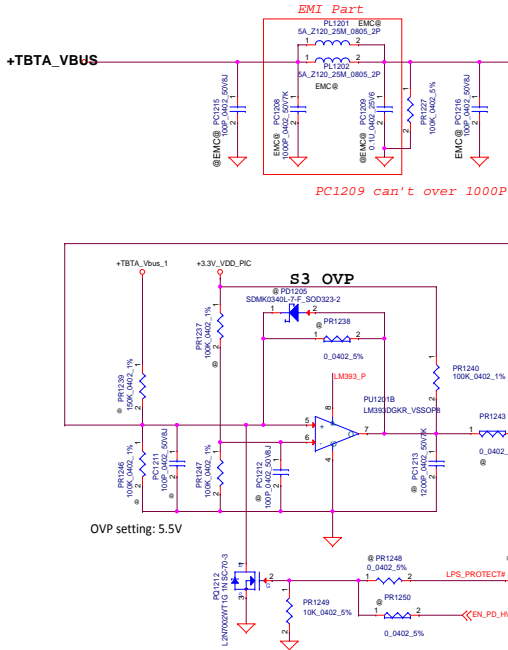
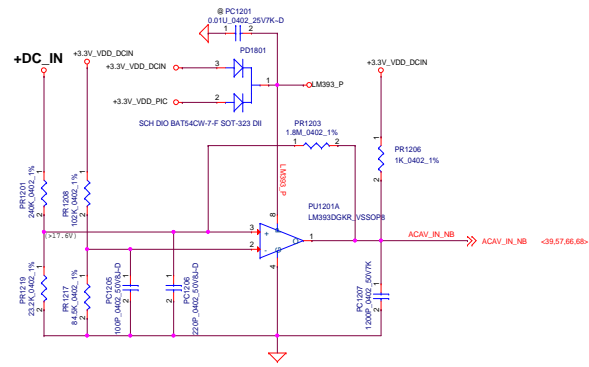


VCC GP Place on CPU
Back Side:
220_0603 * 8 pcs +10U_0402*35 pcs +1U_0201*68 pcs
Primary Side:
220_0603 * 12 pcs +470U_D2*2 pcs

+VCC GP



Security Classification		Compal Secret Data	
Issued Date	2016/10/1	Deciphered Date	2017/10/1
DELL CONFIDENTIAL/PROPRIETARY			
The		Compal Electronics, Inc.	
PROCESSOR DECOUPLING		Document Number	
LA-F52P		Rev 1.0	
Date	Thursday, November 10, 2016	Sheet	67 of 76



Date:	Thursday, November 10, 2016	Sheet	69	of	74
-------	-----------------------------	-------	----	----	----

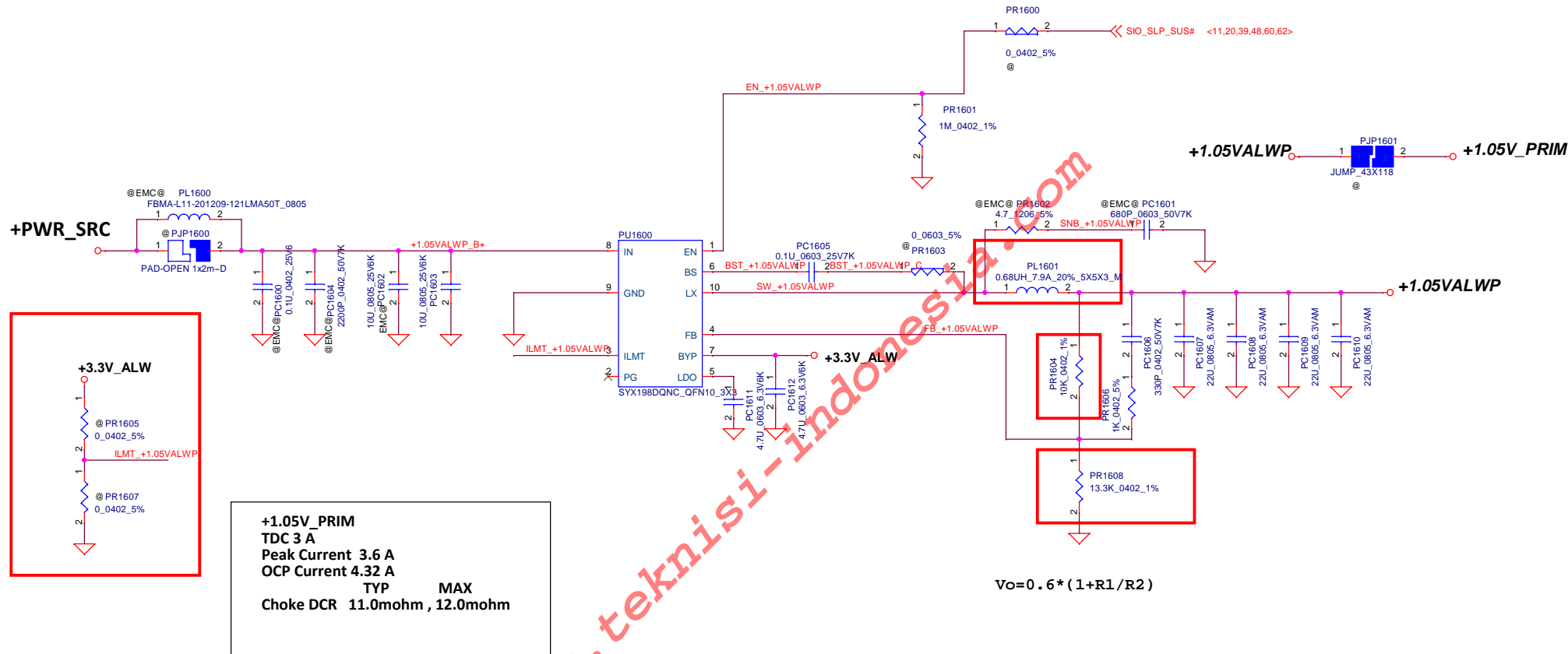


nVidia GB4B-128 package
Under GPU
4.7uF 0603 * 15
1uF 0402 * 8

nVidia GB4B-128 package
Near GPU
22uF 0805 * 7
4.7uF 0805 * 5

Security Classification		Compal Secret Data		DELL CONFIDENTIAL/PROPRIETARY	
Issued Date		2016/01/01		Title	
		Deciphered Date		2017/01/01	
				Compal Electronics, Inc.	
				PROCESSOR DECOUPLING	
Size	Document Number			Rev	
Custom	LA-E152P			1.0	
Date:	Thursday, November 10, 2016	Sheet	71	of	74

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.



The current limit is set to 8A, 12A or 16A when this pin is pull low, floating or pull high

www.teknisi-indonesia.com

Security Classification				Compal Secret Data				DELL CONFIDENTIAL/PROPRIETARY	
Issued Date				2016/01/01		Deciphered Date		2017/01/01	
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.				Title		Compal Electronics, Inc.		+1VALWP	
Size				Document Number		LA-E152P		Rev	
Date				Thursday, November 10, 2016		Sheet		72 of 74	

Version Change List (P. I. R. List)

Item	Page#	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
	63				CPU VR controller change to 95855a ver. Support C10	PU601 to SA0000A4C00 from SA000082P2L	X00
1	68				Change the S4 fast turn off circuit to avoid the leakage.	TypeC: Re-connect the PR1251.1 and PQ1215.3 from +VBUS_DC_SS to +AC_IN.	X01
2	66 68				Add the Circuit for Multiple Input Detach detection & PROCHOT#	Charger: Add PR960 and depop PR919 let the PU901.20 CMIN connect to GND. Add 1 net PROCHOT#_ISL88738 TypeC: Add PQ1216 to drive the PROCHOT# and PC1217 to do the reserve.	X01
3	68				For Temp/Voltage test to fine tune the DC-IN detect voltage from 17.6V to 16.9V	TypeC: PR1219 change from 22.6K to 23.2K. SD034232280	X01
4	64 65				Location Alignment	H-Line VCCSA change the PU607 to PU614 and PL609 to PL614 and PQ601 to PQ614 IA change the PU602,603 to PU610,611 and PL603,604 to PL610,611 GT change the PU605,606 to PU612,613 and PL607,608 to PL612,613	X01
5	66				To decrease the charger input leakage voltage for TypeC AC.	Change the PD903 from SCS0340L010 to SCS00006C00.	X01
6	57 68				To solve the MOS leakage problem to avoid the error active.	PR12, PR11, PR1205, PR1207 and PR1228 change to 499K from 1M ohm PR16, PR18, PR1212, PR1213 and PR1229 change to 49.9K from 1M ohm PR10, PR1251 and PR1202 change to 300K from 100K ohm.	X01
7	68				Reserve the OVP function to protect the typeC device.	Depop PJP1202, PR1255, PR1239, PR1246, PC1211, PR1237, PC1212, PD1205, PC1213, PC1214 and PR1248 Change the PR1247 from 200K_0402_1% to 100K_0402_5% ohm Re-modify the S11 OVP description to S3 OVP.	X01
8	63				CPU transient fine tune.	PC601 to 0.22uf_0402 from 0.33uf_0402 PC609 to 1000p from 680p PR640 to 115k from 110k PC624 to 820p from 330p	X01
9	58,60,69 66				EMI & RF request	RF:PC103 PC303 PC115 PC1302 pop 82P_0402 EMI: PR923 pop 4.7ohm, pc940 pop 680pf PR924 pop 4.7ohm pc941 pop 680pf PR914 to 3.3ohm from 0 ohm PR921 to 4.7 ohm from 2.2 ohm	X01
10	66				Charger IC version change from A to B version.	PU901 to SA00009VW20 from SA00009VW10	X01
11	69				VGA PG pull up R change to PWR from HW side.	Add VGA pull up PR1322 10K_0402	X01
12							
13							
14							

Security Classification		Compal Secret Data		DELL CONFIDENTIAL/PROPRIETARY	
Issued Date	2016/01/01	Deciphered Date	2017/01/01	Title Compal Electronics, Inc.	
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 PWR P.I.R Custom LA-E152P	
				Date:	Thursday, November 10, 2016
				Sheet	73 of 74
				Rev	1.0

Version Change List (P. I. R. List)							
Item	Page#	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
1	40	HW	2016/5/27	COMPAL	Change Panel ID setting for RE15P.	Change RE300 from 13h to 4.3h. (SD028430180)	0.2(X01)
2	11	HW	2016/5/27	COMPAL	Stix(modern standy) support for VCCPLA_OC	Pop RE112 and Depop RE14	0.2(X01)
3	39	HW	2016/5/27	COMPAL	Reserve PORT90.DRT8 PD resistance	Add Ral name VCCP90_RE1U19.4) and connect to RE120.1	0.2(X01)
4	37	HW	2016/6/1	COMPAL	Intel schematics relview modify item	Reserve RE513 100k (SD028100380) to GND	0.2(X01)
5	47	HW	2016/6/1	COMPAL	JU801 pin definition error	CE28,CE29 change from 0.047uF to 0.01uF CE28,CE29 change from 100k to 100k 5003	0.2(X01)
6	41	HW	2016/6/1	COMPAL	TPM change to MOVOTON	Change TPM from Atmel to MOVOTON.	0.2(X01)
7	37	HW	2016/6/1	COMPAL	Intel revview result (WLAN Core feature support)	Add RE112 0 ohm connect WLAN_CORE1 and WLAN_CORE3 Add RE112 0 ohm connect WLAN_CORE1 and WLAN_CORE2 Add RE130 0 ohm connect WLAN_CORE1 and WLAN_CORE1	0.2(X01)
8	37	HW	2016/6/7	COMPAL	Debug card reserve	Add RE131, RE132 for PORT90.DRT8 and HOST_SERVO_TX	0.2(X01)
9	39	HW	2016/6/7	COMPAL	For MCHS105E-DI-TN setting	1. Change U81 to SA000009L00 2. POP RE345,RE352 3. De-POP RE361	0.2(X01)
10	27	HW	2016/6/15	COMPAL	HDMI BA FAIL	Pop RV47, change PE to 1.6ohm	0.2(X01)
11	29	HW	2016/6/15	COMPAL	Change AR crystal	Change TTI to S2105000C00.	0.2(X01)
12	34,37	HW	2016/6/16	COMPAL	For RMC request	De-pop RE131, RE132, CE28 change to 10uF + POP CV7,C81 (100P),CE68 modify from 22p to 47p and POP,Change LV1 to SM1050RW0	0.2(X01)
13	43	HW	2016/6/16	COMPAL	BIT9284924-HDP is still working after press power button into OS during POST.	POP R85	0.2(X01)
14	27	HW	2016/6/17	COMPAL	For bootdrive issue	1. Add C10_P100_VY0MT8 RT391 PU to +3.3V_ALM_P0	0.2(X01)
15	41	HW	2016/6/17	COMPAL	Connector change	1. J0871 change to CV130,CF0260P08M-05-0H 2. J0881 change to CV130,CF0260P08M-05-0H 3. J081 change to ACME S0108-00608-P01	0.2(X01)
16	38	HW	2016/6/20	COMPAL	Vendor suggest	RA7.0A8 change to 14.2ohm	0.2(X01)
17	39	HW	2016/6/22	COMPAL	The possibility of GPIO was update	Add RE514,RE515 for RTC32_ON	0.2(X01)
18	43	HW	2016/6/22	COMPAL	BIT9284924 - (RM,CLAP) PFE AP no function when assouts PP generator or shake PU	PFE_VDD_10 change to +3.3V_X0M	0.2(X01)
19	38	HW	2016/6/23	COMPAL	X8 have no difference J08H1 pin define	Depop DS7,Pop RS87	0.2(X01)
20	38	HW	2016/6/23	COMPAL	Let USB_PMR_EXTRIE keep low at 45	CE10 change from 1M to 100k ohm	0.2(X01)
21	36	HW	2016/6/28	COMPAL	For X11 Board ID	RT79 change from 240k to 130k ohm	0.2(X01)
22	24	HW	2016/6/28	COMPAL	For VMA test result	Pop RV121/RV122/CV132/CV133	0.2(X01)
23	21	HW	2016/6/30	COMPAL	For USB change to DGPU_PMR_RN For RE145, De-POP RE346	1. Add net WRT8 to USB_4 and CE500 1uF (SD000000830) 2. Add RE523 0 ohm for USB power pin auto start 3. Change RE14,RE15,RE18 from 100k ohm to 10k ohm 4. Change WRT8, TX, RX, RX2, TX2, TX3, TX4, TX5, TX6, TX7, TX8, TX9, TX10, TX11, TX12, TX13, TX14, TX15, TX16, TX17, TX18, TX19, TX20, TX21, TX22, TX23, TX24, TX25, TX26, TX27, TX28, TX29, TX30, TX31, TX32, TX33, TX34, TX35, TX36, TX37, TX38, TX39, TX40, TX41, TX42, TX43, TX44, TX45, TX46, TX47, TX48, TX49, TX50, TX51, TX52, TX53, TX54, TX55, TX56, TX57, TX58, TX59, TX60, TX61, TX62, TX63, TX64, TX65, TX66, TX67, TX68, TX69, TX70, TX71, TX72, TX73, TX74, TX75, TX76, TX77, TX78, TX79, TX80, TX81, TX82, TX83, TX84, TX85, TX86, TX87, TX88, TX89, TX90, TX91, TX92, TX93, TX94, TX95, TX96, TX97, TX98, TX99, TX100, TX101, TX102, TX103, TX104, TX105, TX106, TX107, TX108, TX109, TX110, TX111, TX112, TX113, TX114, TX115, TX116, TX117, TX118, TX119, TX120, TX121, TX122, TX123, TX124, TX125, TX126, TX127, TX128, TX129, TX130, TX131, TX132, TX133, TX134, TX135, TX136, TX137, TX138, TX139, TX140, TX141, TX142, TX143, TX144, TX145, TX146, TX147, TX148, TX149, TX150, TX151, TX152, TX153, TX154, TX155, TX156, TX157, TX158, TX159, TX160, TX161, TX162, TX163, TX164, TX165, TX166, TX167, TX168, TX169, TX170, TX171, TX172, TX173, TX174, TX175, TX176, TX177, TX178, TX179, TX180, TX181, TX182, TX183, TX184, TX185, TX186, TX187, TX188, TX189, TX190, TX191, TX192, TX193, TX194, TX195, TX196, TX197, TX198, TX199, TX200, TX201, TX202, TX203, TX204, TX205, TX206, TX207, TX208, TX209, TX210, TX211, TX212, TX213, TX214, TX215, TX216, TX217, TX218, TX219, TX220, TX221, TX222, TX223, TX224, TX225, TX226, TX227, TX228, TX229, TX230, TX231, TX232, TX233, TX234, TX235, TX236, TX237, TX238, TX239, TX240, TX241, TX242, TX243, TX244, TX245, TX246, TX247, TX248, TX249, TX250, TX251, TX252, TX253, TX254, TX255, TX256, TX257, TX258, TX259, TX260, TX261, TX262, TX263, TX264, TX265, TX266, TX267, TX268, TX269, TX270, TX271, TX272, TX273, TX274, TX275, TX276, TX277, TX278, TX279, TX280, TX281, TX282, TX283, TX284, TX285, TX286, TX287, TX288, TX289, TX290, TX291, TX292, TX293, TX294, TX295, TX296, TX297, TX298, TX299, TX300, TX301, TX302, TX303, TX304, TX305, TX306, TX307, TX308, TX309, TX310, TX311, TX312, TX313, TX314, TX315, TX316, TX317, TX318, TX319, TX320, TX321, TX322, TX323, TX324, TX325, TX326, TX327, TX328, TX329, TX330, TX331, TX332, TX333, TX334, TX335, TX336, TX337, TX338, TX339, TX340, TX341, TX342, TX343, TX344, TX345, TX346, TX347, TX348, TX349, TX350, TX351, TX352, TX353, TX354, TX355, TX356, TX357, TX358, TX359, TX360, TX361, TX362, TX363, TX364, TX365, TX366, TX367, TX368, TX369, TX370, TX371, TX372, TX373, TX374, TX375, TX376, TX377, TX378, TX379, TX380, TX381, TX382, TX383, TX384, TX385, TX386, TX387, TX388, TX389, TX390, TX391, TX392, TX393, TX394, TX395, TX396, TX397, TX398, TX399, TX400, TX401, TX402, TX403, TX404, TX405, TX406, TX407, TX408, TX409, TX410, TX411, TX412, TX413, TX414, TX415, TX416, TX417, TX418, TX419, TX420, TX421, TX422, TX423, TX424, TX425, TX426, TX427, TX428, TX429, TX430, TX431, TX432, TX433, TX434, TX435, TX436, TX437, TX438, TX439, TX440, TX441, TX442, TX443, TX444, TX445, TX446, TX447, TX448, TX449, TX450, TX451, TX452, TX453, TX454, TX455, TX456, TX457, TX458, TX459, TX460, TX461, TX462, TX463, TX464, TX465, TX466, TX467, TX468, TX469, TX470, TX471, TX472, TX473, TX474, TX475, TX476, TX477, TX478, TX479, TX480, TX481, TX482, TX483, TX484, TX485, TX486, TX487, TX488, TX489, TX490, TX491, TX492, TX493, TX494, TX495, TX496, TX497, TX498, TX499, TX500, TX501, TX502, TX503, TX504, TX505, TX506, TX507, TX508, TX509, TX510, TX511, TX512, TX513, TX514, TX515, TX516, TX517, TX518, TX519, TX520, TX521, TX522, TX523, TX524, TX525, TX526, TX527, TX528, TX529, TX530, TX531, TX532, TX533, TX534, TX535, TX536, TX537, TX538, TX539, TX540, TX541, TX542, TX543, TX544, TX545, TX546, TX547, TX548, TX549, TX550, TX551, TX552, TX553, TX554, TX555, TX556, TX557, TX558, TX559, TX560, TX561, TX562, TX563, TX564, TX565, TX566, TX567, TX568, TX569, TX570, TX571, TX572, TX573, TX574, TX575, TX576, TX577, TX578, TX579, TX580, TX581, TX582, TX583, TX584, TX585, TX586, TX587, TX588, TX589, TX590, TX591, TX592, TX593, TX594, TX595, TX596, TX597, TX598, TX599, TX600, TX601, TX602, TX603, TX604, TX605, TX606, TX607, TX608, TX609, TX610, TX611, TX612, TX613, TX614, TX615, TX616, TX617, TX618, TX619, TX620, TX621, TX622, TX623, TX624, TX625, TX626, TX627, TX628, TX629, TX630, TX631, TX632, TX633, TX634, TX635, TX636, TX637, TX638, TX639, TX640, TX641, TX642, TX643, TX644, TX645, TX646, TX647, TX648, TX649, TX650, TX651, TX652, TX653, TX654, TX655, TX656, TX657, TX658, TX659, TX660, TX661, TX662, TX663, TX664, TX665, TX666, TX667, TX668, TX669, TX670, TX671, TX672, TX673, TX674, TX675, TX676, TX677, TX678, TX679, TX680, TX681, TX682, TX683, TX684, TX685, TX686, TX687, TX688, TX689, TX690, TX691, TX692, TX693, TX694, TX695, TX696, TX697, TX698, TX699, TX700, TX701, TX702, TX703, TX704, TX705, TX706, TX707, TX708, TX709, TX710, TX711, TX712, TX713, TX714, TX715, TX716, TX717, TX718, TX719, TX720, TX721, TX722, TX723, TX724, TX725, TX726, TX727, TX728, TX729, TX730, TX731, TX732, TX733, TX734, TX735, TX736, TX737, TX738, TX739, TX740, TX741, TX742, TX743, TX744, TX745, TX746, TX747, TX748, TX749, TX750, TX751, TX752, TX753, TX754, TX755, TX756, TX757, TX758, TX759, TX760, TX761, TX762, TX763, TX764, TX765, TX766, TX767, TX768, TX769, TX770, TX771, TX772, TX773, TX774, TX775, TX776, TX777, TX778, TX779, TX780, TX781, TX782, TX783, TX784, TX785, TX786, TX787, TX788, TX789, TX790, TX791, TX792, TX793, TX794, TX795, TX796, TX797, TX798, TX799, TX800, TX801, TX802, TX803, TX804, TX805, TX806, TX807, TX808, TX809, TX810, TX811, TX812, TX813, TX814, TX815, TX816, TX817, TX818, TX819, TX820, TX821, TX822, TX823, TX824, TX825, TX826, TX827, TX828, TX829, TX830, TX831, TX832, TX833, TX834, TX835, TX836, TX837, TX838, TX839, TX840, TX841, TX842, TX843, TX844, TX845, TX846, TX847, TX848, TX849, TX850, TX851, TX852, TX853, TX854, TX855, TX856, TX857, TX858, TX859, TX860, TX861, TX862, TX863, TX864, TX865, TX866, TX867, TX868, TX869, TX870, TX871, TX872, TX873, TX874, TX875, TX876, TX877, TX878, TX879, TX880, TX881, TX882, TX883, TX884, TX885, TX886, TX887, TX888, TX889, TX890, TX891, TX892, TX893, TX894, TX895, TX896, TX897, TX898, TX899, TX900, TX901, TX902, TX903, TX904, TX905, TX906, TX907, TX908, TX909, TX910, TX911, TX912, TX913, TX914, TX915, TX916, TX917, TX918, TX919, TX920, TX921, TX922, TX923, TX924, TX925, TX926, TX927, TX928, TX929, TX930, TX931, TX932, TX933, TX934, TX935, TX936, TX937, TX938, TX939, TX940, TX941, TX942, TX943, TX944, TX945, TX946, TX947, TX948, TX949, TX950, TX951, TX952, TX953, TX954, TX955, TX956, TX957, TX958, TX959, TX960, TX961, TX962, TX963, TX964, TX965, TX966, TX967, TX968, TX969, TX970, TX971, TX972, TX973, TX974, TX975, TX976, TX977, TX978, TX979, TX980, TX981, TX982, TX983, TX984, TX985, TX986, TX987, TX988, TX989, TX990, TX991, TX992, TX993, TX994, TX995, TX996, TX997, TX998, TX999, TX1000, TX1001, TX1002, TX1003, TX1004, TX1005, TX1006, TX1007, TX1008, TX1009, TX1010, TX1011, TX1012, TX1013, TX1014, TX1015, TX1016, TX1017, TX1018, TX1019, TX1020, TX1021, TX1022, TX1023, TX1024, TX1025, TX1026, TX1027, TX1028, TX1029, TX1030, TX1031, TX1032, TX1033, TX1034, TX1035, TX1036, TX1037, TX1038, TX1039, TX1040, TX1041, TX1042, TX1043, TX1044, TX1045, TX1046, TX1047, TX1048, TX1049, TX1050, TX1051, TX1052, TX1053, TX1054, TX1055, TX1056, TX1057, TX1058, TX1059, TX1060, TX1061, TX1062, TX1063, TX1064, TX1065, TX1066, TX1067, TX1068, TX1069, TX1070, TX1071, TX1072, TX1073, TX1074, TX1075, TX1076, TX1077, TX1078, TX1079, TX1080, TX1081, TX1082, TX1083, TX1084, TX1085, TX1086, TX1087, TX1088, TX1089, TX1090, TX1091, TX1092, TX1093, TX1094, TX1095, TX1096, TX1097, TX1098, TX1099, TX1100, TX1101, TX1102, TX1103, TX1104, TX1105, TX1106, TX1107, TX1108, TX1109, TX1110, TX1111, TX1112, TX1113, TX1114, TX1115, TX1116, TX1117, TX1118, TX1119, TX1120, TX1121, TX1122, TX1123, TX1124, TX1125, TX1126, TX1127, TX1128, TX1129, TX1130, TX1131, TX1132, TX1133, TX1134, TX1135, TX1136, TX1137, TX1138, TX1139, TX1140, TX1141, TX1142, TX1143, TX1144, TX1145, TX1146, TX1147, TX1148, TX1149, TX1150, TX1151, TX1152, TX1153, TX1154, TX1155, TX1156, TX1157, TX1158, TX1159, TX1160, TX1161, TX1162, TX1163, TX1164, TX1165, TX1166, TX1167, TX1168, TX1169, TX1170, TX1171, TX1172, TX1173, TX1174, TX1175, TX1176, TX1177, TX1178, TX1179, TX1180, TX1181, TX1182, TX1183, TX1184, TX1185, TX1186, TX1187, TX1188, TX1189, TX1190, TX1191, TX1192, TX1193, TX1194, TX1195, TX1196, TX1197, TX1198, TX1199, TX1200, TX1201, TX1202, TX1203, TX1204, TX1205, TX1206, TX1207, TX1208, TX1209, TX1210, TX1211, TX1212, TX1213, TX1214, TX1215, TX1216, TX1217, TX1218, TX1219, TX1220, TX1221, TX1222, TX1223, TX1224, TX1225, TX1226, TX1227, TX1228, TX1229, TX1230, TX1231, TX1232, TX1233, TX1234, TX1235, TX1236, TX1237, TX1238, TX1239, TX1240, TX1241, TX1242, TX1243, TX1244, TX1245, TX1246, TX1247, TX1248, TX1249, TX1250, TX1251, TX1252, TX1253, TX1254, TX1255, TX1256, TX1257, TX1258, TX1259, TX1260, TX1261, TX1262, TX1263, TX1264, TX1265, TX1266, TX1267, TX1268, TX1269, TX1270, TX1271, TX1272, TX1273, TX1274, TX1275, TX1276, TX1277, TX1278, TX1279, TX1280, TX1281, TX1282, TX1283, TX1284, TX1285, TX1286, TX1287, TX1288, TX1289, TX1290, TX1291, TX1292, TX1293, TX1294, TX1295, TX1296, TX1297, TX1298, TX1299, TX1300, TX1301, TX1302, TX1303, TX1304, TX1305, TX1306, TX1307, TX1308, TX1309, TX1310, TX1311, TX1312, TX1313, TX1314, TX1315, TX1316, TX1317, TX1318, TX1319, TX1320, TX1321, TX1322, TX1323, TX1324, TX1325, TX1326, TX1327, TX1328, TX1329, TX1330, TX1331, TX1332, TX1333, TX1334, TX1335, TX1336, TX1337, TX1338, TX1339, TX1340, TX1341, TX1342, TX1343, TX1344, TX1345, TX1346, TX1347, TX1348, TX1349, TX1350, TX1351, TX1352, TX1353, TX1354, TX1355, TX1356, TX1357, TX1358, TX1359, TX1360, TX1361, TX1362, TX1363, TX1364, TX1365, TX1366, TX1367, TX1368, TX1369, TX1370, TX1371, TX1372, TX1373, TX1374, TX1375, TX1376, TX1377, TX1378, TX1379, TX1380, TX1381, TX1382, TX1383, TX1384, TX1385, TX1386, TX1387, TX1388, TX1389, TX1390, TX1391, TX1392, TX1393, TX1394, TX1395, TX1396, TX1397, TX1398, TX1399, TX1400, TX1401, TX1402, TX1403, TX1404, TX1405, TX1406, TX1407, TX1408, TX1409, TX1410, TX1411, TX1412, TX1413, TX1414, TX1415, TX1416, TX1417, TX1418, TX1419, TX1420, TX1421, TX1422, TX1423, TX1424, TX1425, TX1426, TX1427, TX1428, TX1429, TX1430, TX1431, TX1432, TX1433, TX1434, TX1435, TX1436, TX1437, TX1438, TX1439, TX1440, TX1441, TX1442, TX1443, TX1444, TX1445, TX1446, TX1447, TX1448, TX1449, TX1450, TX1451, TX1452, TX1453, TX1454, TX1455, TX1456, TX1457, TX1458, TX1459, TX1460, TX1461, TX1462, TX1463, TX1464, TX1465, TX1466, TX1467, TX1468, TX1469, TX1470, TX1471, TX1472, TX1473, TX1474, TX1475, TX1476, TX1477, TX1478, TX1479, TX1480, TX1481, TX1482, TX1483, TX1484, TX1485, TX1486, TX1487, TX1488, TX1489, TX1490, TX1491, TX1492, TX1493, TX1494, TX1495, TX1496, TX1497, TX1498, TX1499, TX1500, TX1501, TX1502, TX1503, TX1504, TX1505, TX1506, TX1507, TX1508, TX1509, TX1510, TX1511, TX1512, TX1513, TX1514, TX1515, TX1516, TX1517, TX1518, TX1519, TX1520, TX1521, TX1522, TX1523, TX1524, TX1525, TX1526, TX1527, TX1528, TX1529, TX1530, TX1531, TX1532, TX1533, TX1534, TX1535, TX1536, TX1537, TX1538, TX1539, TX1540, TX1541, TX1542, TX1543, TX1544, TX1545, TX1546, TX1547, TX1548, TX1549, TX1550, TX1551, TX1552, TX1553, TX1554, TX1555, TX1556, TX1557, TX1558, TX1559, TX1560, TX1561, TX1562, TX1563, TX1564, TX1565, TX1566, TX1567, TX1568, TX1569, TX1570, TX1571, TX1572, TX1573, TX1574, TX1575, TX1576, TX1577, TX1578, TX1579, TX1580, TX1581, TX1582, TX1583, TX1584, TX1585, TX1586, TX1587, TX1588, TX1589, TX1590, TX1591, TX1592, TX1593, TX1594, TX1595, TX1596, TX1597, TX1598, TX1599, TX1600, TX1601, TX1602, TX1603, TX1604, TX1605, TX1606, TX1607, TX1608, TX1609, TX1610, TX1611, TX1612, TX1613, TX1614, TX1615, TX1616, TX1617, TX1618, TX1619, TX1620, TX1621, TX1622, TX1623, TX1624, TX1625, TX1626, TX1627, TX1628, TX1629, TX1630, TX1631, TX1632, TX1633, TX1634, TX1635, TX1636, TX1637, TX1638, TX1639, TX1640, TX1641, TX1642, TX1643, TX1644, TX1645, TX1646, TX1647, TX1648, TX1649, TX1650, TX1651, TX1652, TX1653, TX1654, TX1655, TX1656, TX1657, TX1658, TX1659, TX1660, TX1661, TX1662, TX1663, TX1664, TX1665, TX1666, TX1667, TX1668, TX1669, TX1670, TX1671, TX16	