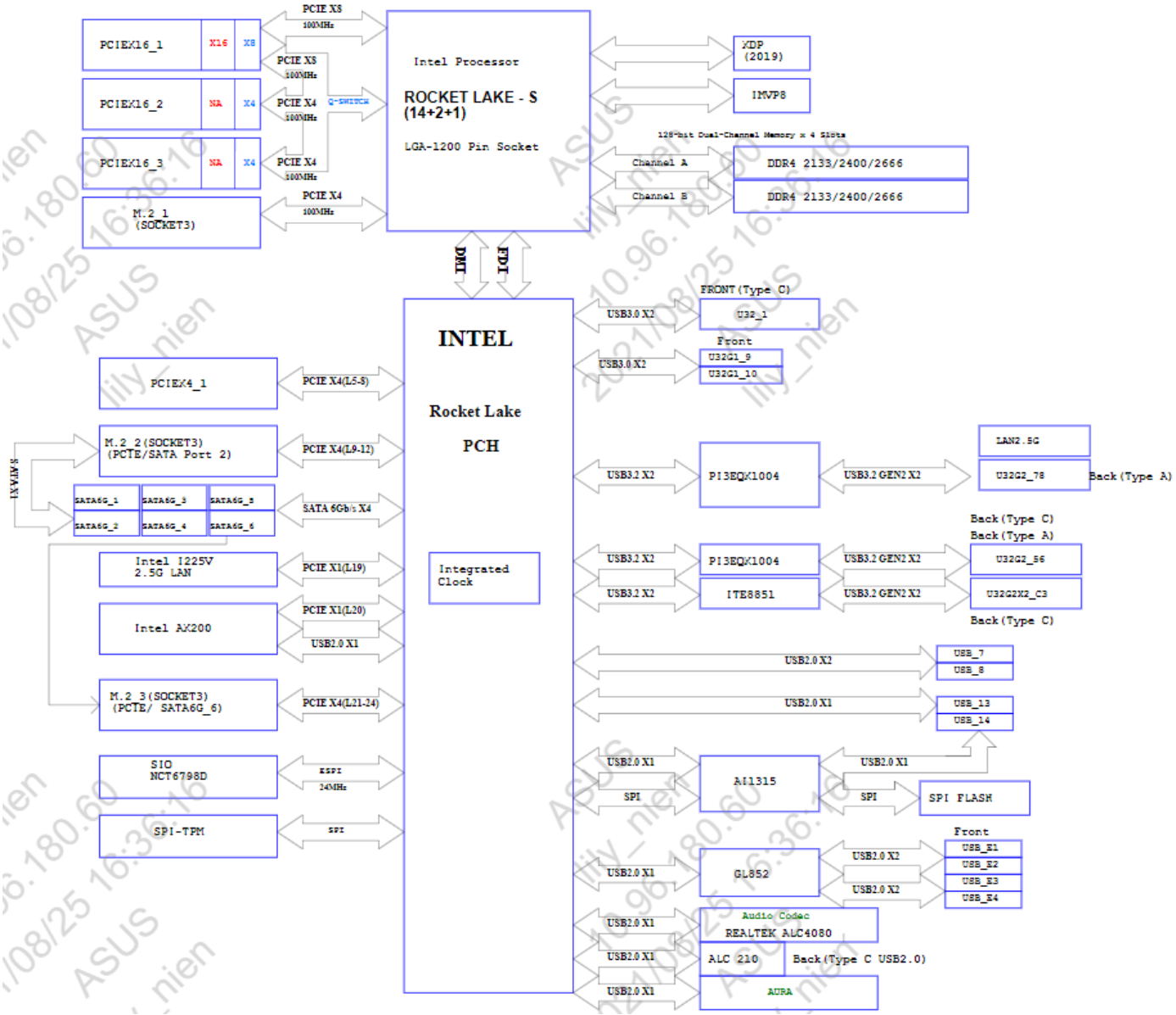
ROG STRIX Z590-A GAMING WIFI II Repair Guide

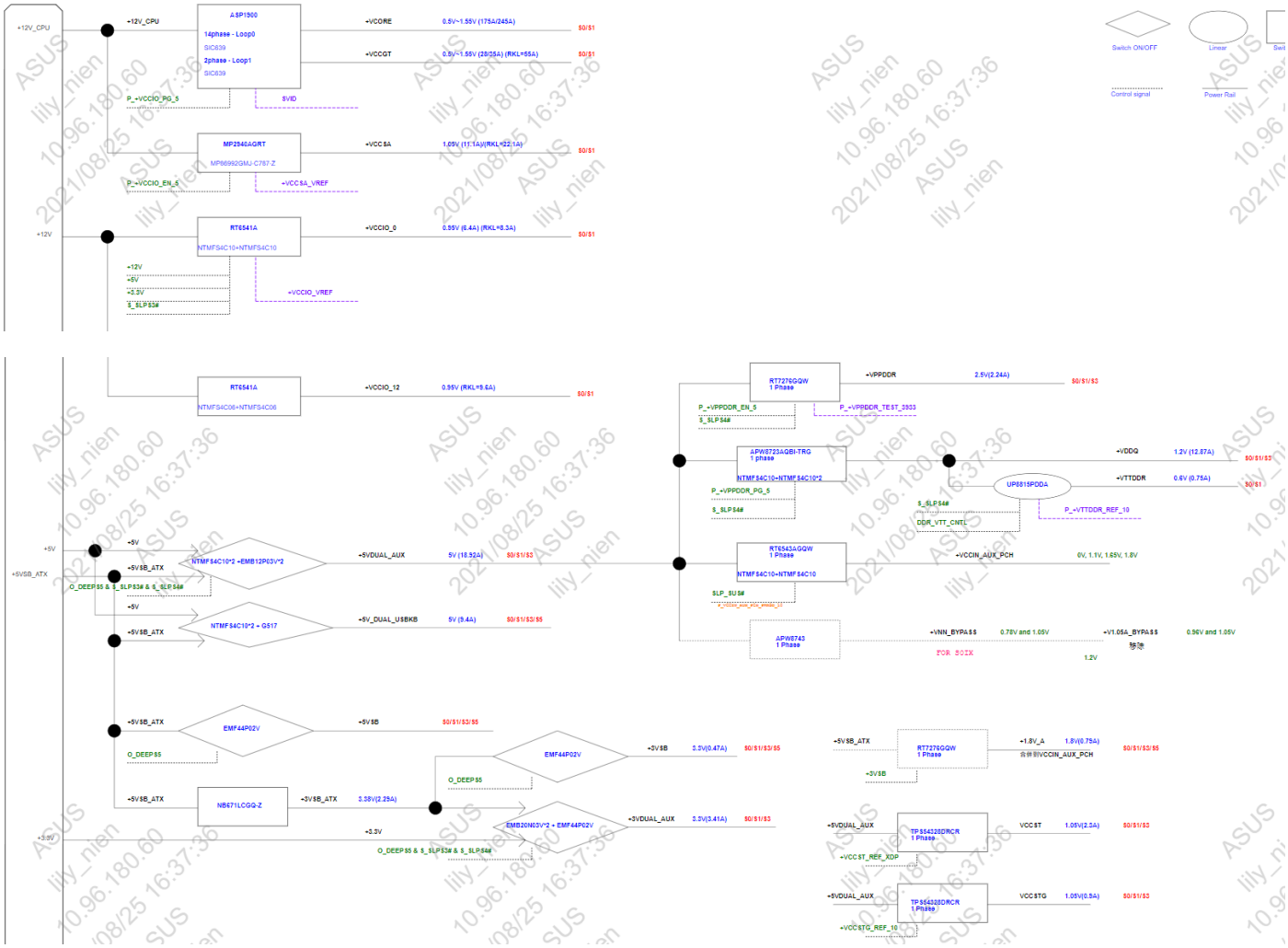
2021/8/25

1. STANDARD APPEARANCE

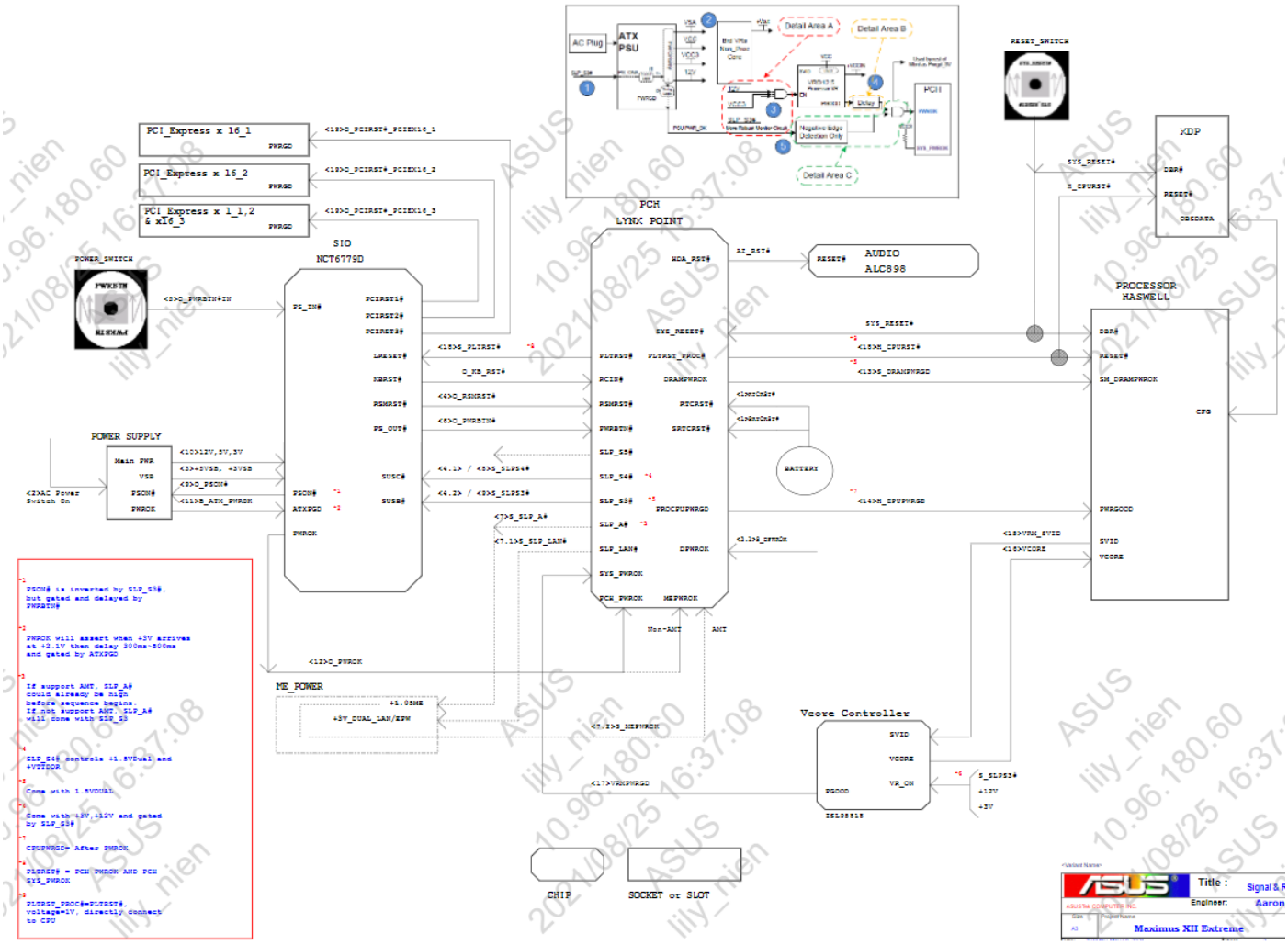
2. BLOCK DIAGRAM



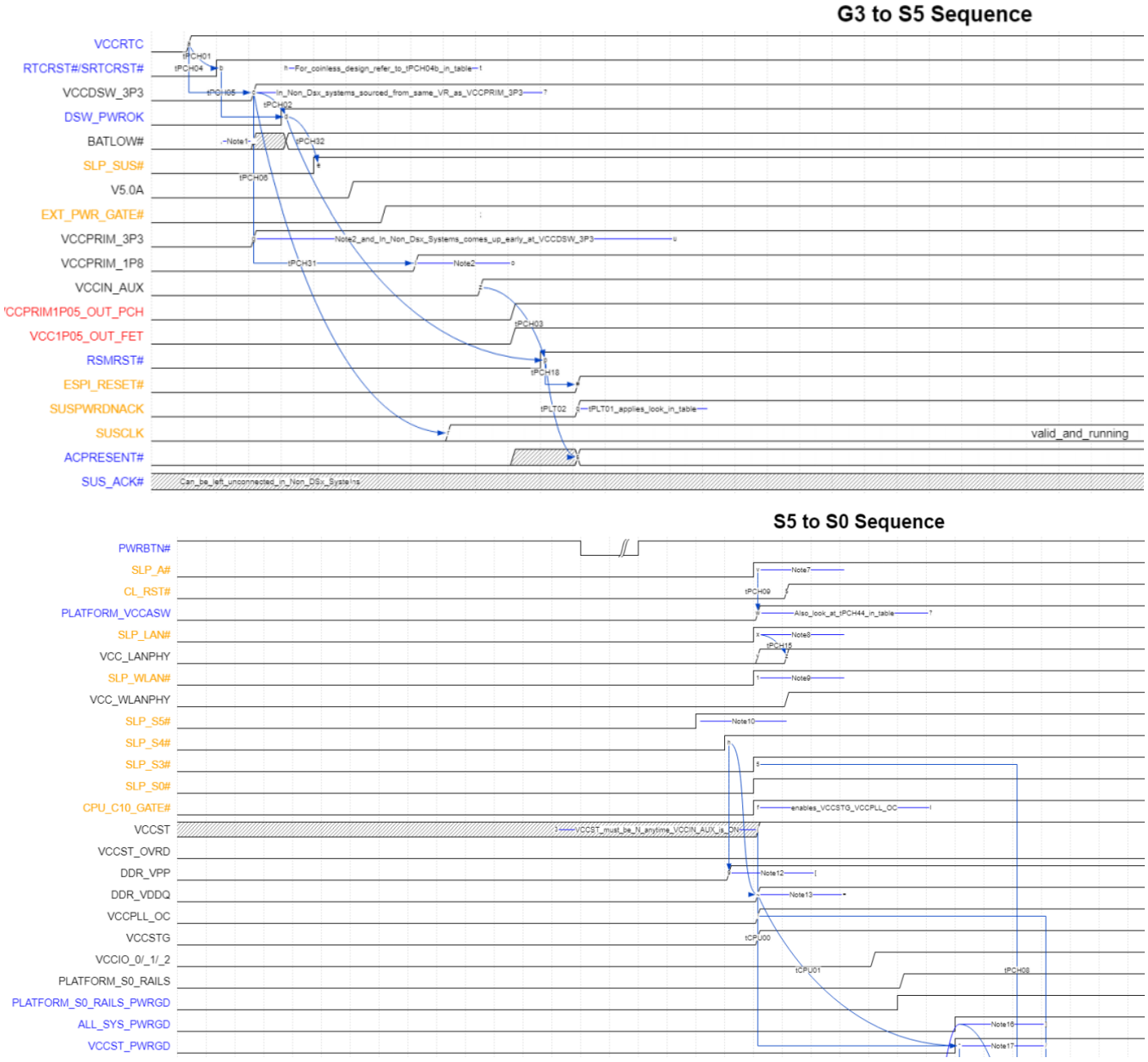
3. POWER FLOW


+12V_CPU
ASP1900
14phase - Loop0
SIC639
2phase - Loop1
SIC639
+VCORE
0.5V~1.55V (175A/245A)
+VCCGT
0.5V~1.55V (28/35A) (RKL=55A)
SVID
MP2940AGRT
MP86992GMJ-C787-Z
+VCCSA
1.05V (11.1A)(RKL=22.1A)
+VCCSA_VREF
RT6541A
NTMFS4C10+NTMFS4C10
+VCCIO_0
0.55V (6.4A) (RKL=8.3A)
+VCCIO_VREF
RT6541A
NTMFS4C06+NTMFS4C06
+VCCIO_12
0.55V (RKL=5.6A)
RT7276GQW
1 Phase
+VPPDDR
2.5V(2.24A)
APW8723AQBI-TRG
1 phase
NTMF84C10+NTMF84C10*2
+VDDQ
1.2V (12.87A)
+VTTDDR
0.6V (0.75A)
UP6815PDDA
DDR_VTT_CNTL
RT6543AGQW
1 Phase
NTMF84C10+NTMF84C10
+VCCIN_AUX_PCH
0V, 1.1V, 1.65V, 1.8V
APW8743
1 Phase
+VNN_BYPASS
0.78V and 1.05V
+V1.05A_BYPASS
0.96V and 1.05V
FOR SOIX
NTMF84C10*2 +EMB12P03V*2
+5VDUAL_AUX
5V (18.92A)
NTMF84C10*2 + G517
+5V_DUAL_USBKB
5V (5.4A)
EMF44P02V
+5VSB
5.2V(0.47A)
EMB20N03V*2 + EMF44P02V
+3VDUAL_AUX
3.2V(3.41A)
NB671LCGQ-Z
+3VSB_ATX
3.38V(2.25A)
RT7278GQW
1 Phase
+1.8V_A
1.8V(0.75A)
TPS54328DRCR
1 Phase
VCCST
1.05V(2.5A)
VCCSTG
1.05V(0.5A)

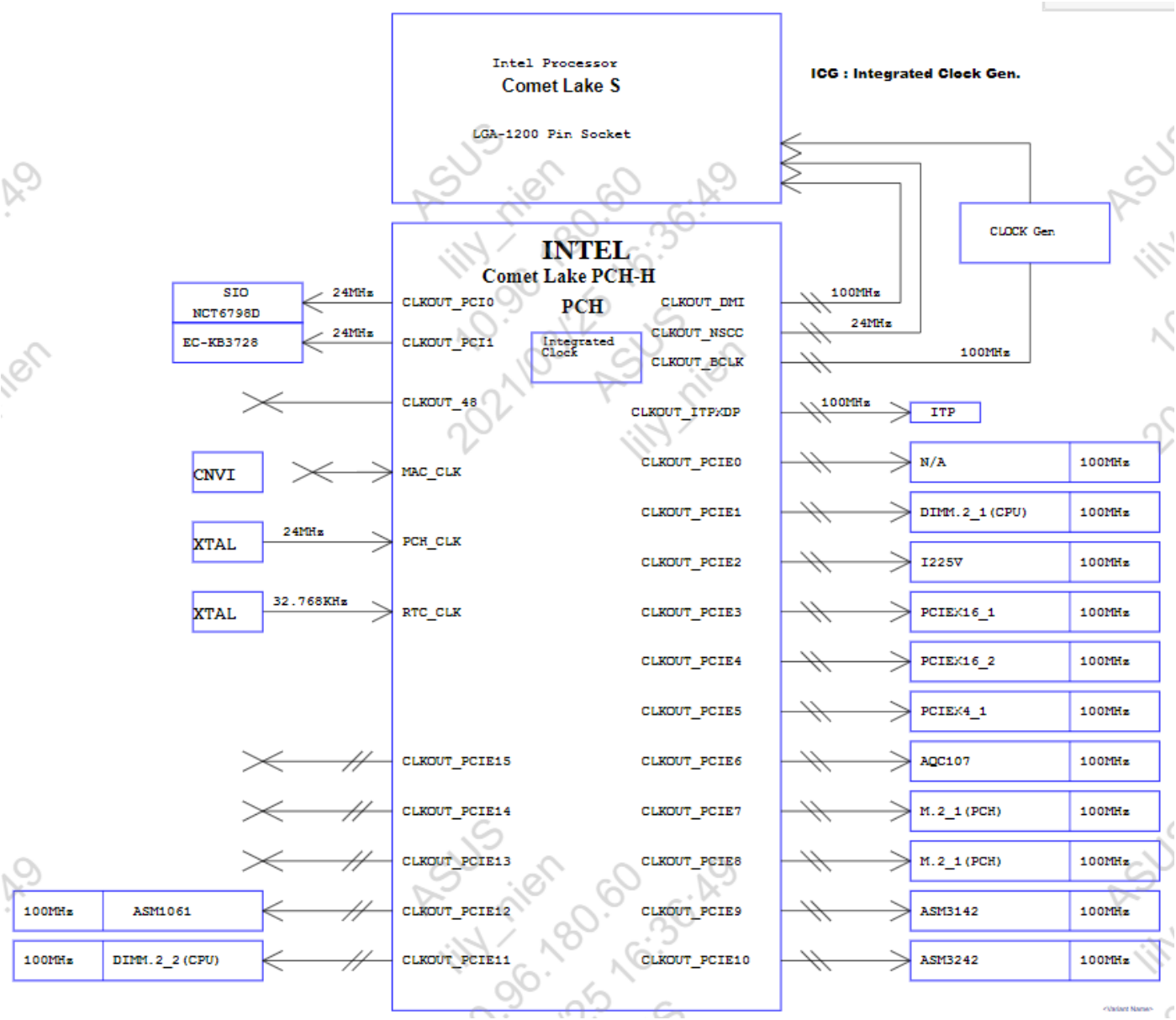
4. POWER ON SEQUENCE



5. Timing Diagram for G3 to S0



6. **Frequency Flow**



7. Socket reflow profile

Step 1 Board Preheat	Step 2 Soak Time	Step 3 Peak Reflow & Time Above 220 °C	Step 4 Cool Down
Start with solder joint temp < 40°C	Top heater nozzle should be lowered around 150 ° C	Heat from Top heater nozzle and bottom heater is used to reach peak reflow temperature	Raise nozzle after reaching the peak reflow temperature
Board Preheat Solder Joint Temp: 125 – 150°C	BGA Critical Ramp Rate (205 to 215°C): 0.35 – 0.75°C/sec	Peak Temp Range, and Time Above ≥ 220°C	Cooling Ramp Rate. BGA -0.5 to -2 °C/sec
Rising Ramp Rate below 150ºC: 0.5 to 2.5 ºC/sec	Soak Temp & Time (Flux or Paste dependent; consult manufacturer)	Solder Joint Temp: 230°C -245°C Time Above ≥ 220°C 60 – 90 sec Max Delta Temp at peak reflow ≤10°C Max component temperature ≤ 250 °C. Never exceeds 260 °C	PCB land/pad temperature needs to be at 100 – 130°C ± 5°C
Preheat with bottom heater, before nozzle is lowered	Nozzle has lowered to reflow component	Nozzle is down during peak reflow	Board can be removed at 100 to 130ºC for PCB pad site preparation

Parameter		Recommendations for Customer Evaluation
Moisture		
Moisture Sensitivity Level (MSL)		MSL3
Solder Paste Print		
Intel Evaluated Solder Pastes		Refer to Intel Evaluated Solder Pastes
Stencil Thickness & Aperture Design		Refer to stencil design recommendations
Pick and Place (PnP)		
Component Placement		100% ball recognition
Reflow		
Reflow Pallets		Refer to SMT Reflow Pallet Recommendations
Reflow Profile	Reflow Ambient	N_2 (O_2 ≤3000 PPM). Air is acceptable but not recommended. ➢ **Recommend N_2 (O_2 <3000 PPM) reflow only for TGL UP4 package**
	Rising (+) and Falling (-) Ramp Rate	≤ 3 °C/second
	Soak Temp and Time	Paste Dependent. Follow paste manufacturer's requirements
	Time Above ≥ 220°C	60-90 Seconds for Air reflow 40-90 seconds for N_2 (0_2≤3000PPM) reflow
	Solder Joint Peak Reflow Temp	240 ± 5°C recommended (do not exceed 250°C)
	Maximum Body and Substrate Temp	≤250°C. Never exceed 260°C
	Component Delta T (ΔT)	Control ΔT across component to ≤10°C for uniform heating