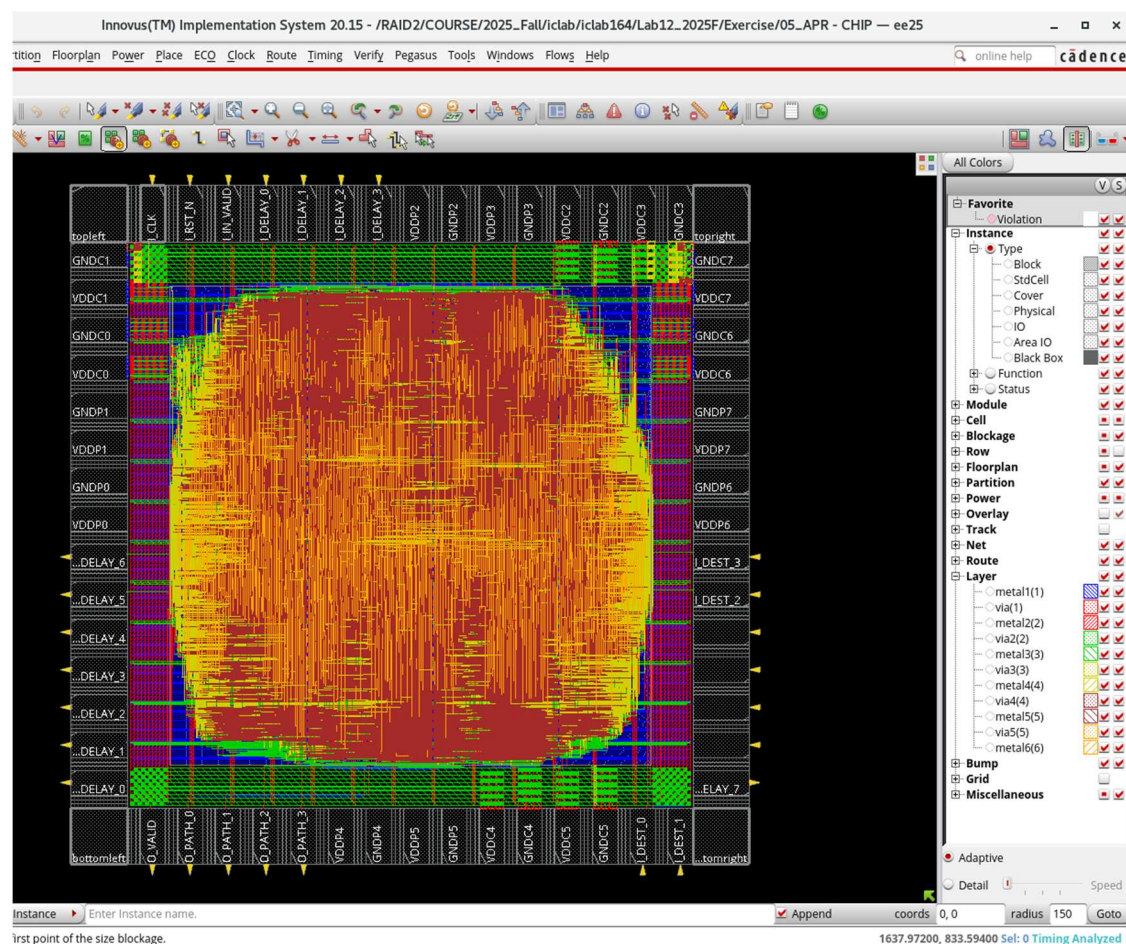


**iclab164**

## 1. Chip Layout View :







### 3. Core Ring :



## 4. Post-Route setup time analysis :

```
ee22.siz2.iee.nyu.edu.tw (iclab164)
Terminal Sessions View X server Games Settings Macros Help
Session Servers Tools Games Sessions View Split MUXExec Tunneling Packages Settings Help
Quick connect...
RAID2/COURSE/2025_Fall/iclab/iclab164/
Name Size (KB) La
.cache
.cadence
.cds_pegasus_ui
.config
.dbus
.inc
.java
.local
.mdv
.mozila
.unvision
.ssh
.synopsys_dc_gui
.synopsys_ic_gui
.synopsys_pt_gui
.vnc
2025_F_OT
Desktop
Downloads
Lab01_2025F
Lab02
Lab03
Lab04
Lab05_2025F
Lab06
Lab07
Lab08
Lab09
Lab10
Lab11_2025F
Lab12_2025F
Midterm_Project_2025
Music
WaveLog
.pdfs
Pictures
Public
Templates
thunderbolt_drives
Videos
.bash_logout 1 20
.bash_profile 1 20
.bashrc 1 20
.flexnrc 1 20
.history 6 20
.lccauthority 2 20
.lshrc 1 20
.nfs0000000311e332e0003... 128 20
.nfs0000000311f326400036... 128 20
.nfs0000000311f4e4c220004... 128 20
.nfs0000000311f611c630003... 128 20
.nfs0000000311f611c660004... 128 20
.nfs0000000311f611c670003... 128 20
.nfs0000000311f611c690006... 128 20
.vera_onesearch_history.log 0 20
.xauthority 2 20
.xsession-errors 0 20
.novae.conf 4 20
.novae.rc 33 20
Remote monitoring
Follow terminal folder

Iqquantus Extraction engine is being closed...
Iqquantus Fullchip Extraction DONE (CPU Time: 0:01:17 Real Time: 0:01:18 MEM: 2401.594M)
Starting delay calculation for Setup views
AAE_INFO: resetNetProps viewIdx 0
Starting SI iteration 1 using Infinite Timing Windows
#####
# Design Stage: PostRoute
# Design Name: CHIP
# Design Mode: 10nm
# Analysis Mode: MWC OCV
# Parasitics Mode: SPEF/RCDB
# Signoff Settings: SI on
#####
AAE_INFO: 1 threads acquired from CTE.
Start delay calculation (fullDC) (1 T). (MEM=2401.59)
AAE_INFO: Number of noise libraries (CDBs ) loaded = 2
AAE_INFO: Cdb files are:
/RAID2/COURSE/2025_Fall/iclab/iclab164/Lab12_2025F/Exercise/05_APR/CHIP.inn.dat/libs/mmmmc/ai18_ss.cdb
/RAID2/COURSE/2025_Fall/iclab/iclab164/Lab12_2025F/Exercise/05_APR/CHIP.inn.dat/libs/mmmmc/ai18_ff.cdb
***WARN: (IMPESI-3086): The cell 'XMD' does not have characterized noise model(s) for 'f5a0m_a_t33_generic_io_ssi62v125c, f5a0m_a_t33'
Type 'man IMPESI-3086' for more detail.
***WARN: (IMPESI-3086): The cell 'YA2G5D' does not have characterized noise model(s) for 'f5a0m_a_t33_generic_io_ssi62v125c, f5a0m_a_t33'
Type 'man IMPESI-3086' for more detail.
Total number of fetched objects 26099
AAE_INFO: Total number of nets for which stage creation was skipped for all views 0
AAE_INFO-618: Total number of nets in the design is 26048, 0.1 percent of the nets selected for SI analysis
End delay calculation. (MEM=2436.88 CPU=0:00:08.1 REAL=0:00:08.0)
End delay calculation (fullDC). (MEM=2400.27 CPU=0:00:09.4 REAL=0:00:09.0)
Loading CTE timing window with TwFlowType 0...(CPU = 0:00:00.0, REAL = 0:00:00.0, MEM = 2400.3M)
Add other clocks and setupCtoAAEClockMapping during iter 1
Loading CTE timing window is completed (CPU = 0:00:00.1, REAL = 0:00:00.0, MEM = 2400.3M)
Starting SI iteration 2
Start delay calculation (fullDC) (1 T). (MEM=2329.38)
Glitch Analysis: View av_func_mode_max -- Total Number of Nets Skipped = 0,
Total Number of Nets Analyzed = 26099.
Total number of fetched objects 26099
AAE_INFO: Total number of nets for which stage creation was skipped for all views 0
AAE_INFO-618: Total number of nets in the design is 26048, 0.1 percent of the nets selected for SI analysis
End delay calculation. (MEM=2368.55 CPU=0:00:00.1 REAL=0:00:00.0)
End delay calculation (fullDC). (MEM=2368.55 CPU=0:00:00.2 REAL=0:00:01.0)
*** Done Building Timing Graph (cpu=0:00:12.2 real=0:00:12.0 totSessionCpu=0:01:54 mem=2368.5M)

-----
timeDesign Summary
-----
Setup views included:
av_func_mode_max

-----
| Setup mode | all | reg2reg | default |
-----
| WNS (ns): | 0.055 | 0.158 | 0.055 |
| TNS (ns): | 0.000 | 0.000 | 0.000 |
| Violating Paths: | 0 | 0 | 0 |
| All Paths: | 1415 | 688 | 727 |
-----

-----
| | Real | Total |
| DRVs | Nr nets(terms) | Worst Vio | Nr nets(terms) |
-----
| max_cap | 0 (0) | 0.000 | 0 (0) |
| max_tran | 0 (0) | 0.000 | 0 (0) |
| max_fanout | 0 (0) | 0 | 0 (0) |
| max_length | 0 (0) | 0 | 0 (0) |
-----

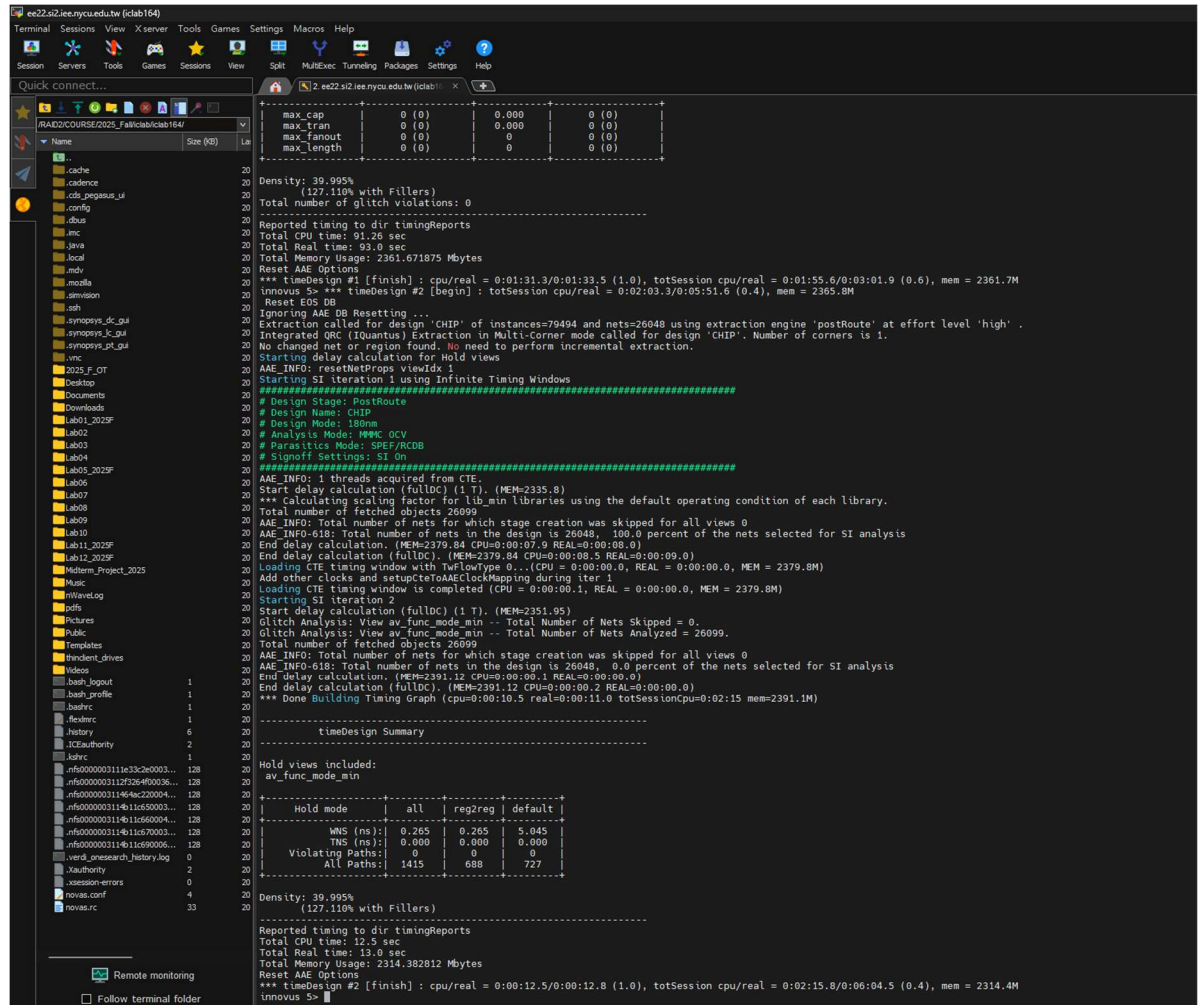
Density: 39.995%
(127.110% with Fillers)
Total number of glitch violations: 0

-----
Reported timing to dir timingReports
Total CPU time: 91.26 sec
Total Real time: 93.0 sec
Total Memory Usage: 2361.671875 Mbytes
Reset AAE Options
*** timeDesign #1 [finish] : cpu/real = 0:01:31.3/0:01:33.5 (1.0), totSession cpu/real = 0:01:55.6/0:03:01.9 (0.6), mem = 2361.7M
innovus >
```



## 5. Post-Route hold time analysis :

Instructions: After completing the analysis, capture a screenshot of the results displayed in the terminal (including the timeDesign Summary).



```
ee22.s2.iee.nyu.edu.tw (iclab164)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View
Quick connect...
RAD2COURSE/2025_Fall/iclab164/
Name Size (KB) Lib
.cache 20
.cadence 20
.cds_pegasus_uh 20
.config 20
.dbus 20
.jmc 20
.java 20
.local 20
.mdv 20
.mzola 20
.srvision 20
.ssh 20
.synopsys_dc_gui 20
.synopsys_ic_gui 20
.synopsys_rt_gui 20
.ync 20
2025_F_OT 20
Desktop 20
Documents 20
Downloads 20
lab01_2025F 20
lab02 20
lab03 20
lab04 20
lab05_2025F 20
lab06 20
lab07 20
lab08 20
lab09 20
lab10 20
lab11_2025F 20
lab12_2025F 20
Midterm_Project_2025 20
Music 20
nWaveLog 20
pdfs 20
Pictures 20
Public 20
Templates 20
trident_drives 20
Videos 20
bash_logout 1
bash_profile 1
bashrc 1
flexbmc 1
History 6
IC2Authority 2
icbrc 1
info00000311e33-2e0003... 128
info000003112f26-4f0003... 128
info0000031146-4c220004... 128
info000003114b11e50003... 128
info00000311411c960004... 128
info000003114b11c670003... 128
info000003114b11c690006... 128
verdi_onesearch_history.log 0
xauthority 2
xsession-errors 0
novas.conf 4
novas.rc 33
Remote monitoring
Follow terminal folder

max_cap 0 (0) 0.000 0 (0)
max_tran 0 (0) 0.000 0 (0)
max_fanout 0 (0) 0 0 (0)
max_length 0 (0) 0 0 (0)

Density: 39.995%
(127.110% with Fillers)
Total number of glitch violations: 0
Reported timing to dir timingReports
Total CPU time: 91.26 sec
Total Real time: 93.0 sec
Total Memory usage: 2361.671875 Mbytes
Reset AAE Options
*** timeDesign #1 [finish] : cpu/real = 0:01:31.3/0:01:33.5 (1.0), totSession cpu/real = 0:01:55.6/0:03:01.9 (0.6), mem = 2361.7M
Innovus > *** timeDesign #2 [begin] : totSession cpu/real = 0:02:03.3/0:05:51.6 (0.4), mem = 2365.8M
Reset EOS DB
Ignoring AAE DB Resetting ...
Extraction called for design 'CHIP' of instances=79494 and nets=26048 using extraction engine 'postRoute' at effort level 'high'.
Integrated QRC (IQuantus) Extraction in Multi-Corner mode called for design 'CHIP'. Number of corners is 1.
No changed net or region found. No need to perform incremental extraction.
Starting delay calculation for Hold views
AAE INFO: resetNetProps viewIdx 1
Starting SI iteration 1 using Infinite Timing Windows
*****
# Design Stage: PostRoute
# Design Name: CHIP
# Design Mode: 18nm
# Analysis Mode: MMWC_OCV
# Parasitics Mode: SPEF/RCDB
# Signoff Settings: SI On
*****
AAE INFO: 1 threads acquired from CTE.
Start delay calculation (fullDC) (1 T). (MEM=2335.8)
*** Calculating scaling factor for lib_min libraries using the default operating condition of each library.
Total number of fetched objects 26099
AAE INFO: Total number of nets for which stage creation was skipped for all views 0
AAE INFO-618: Total number of nets in the design is 26048, 100.0 percent of the nets selected for SI analysis
End delay calculation. (MEM=2379.84 CPU=0:00:07.9 REAL=0:00:08.0)
End delay calculation (fullDC). (MEM=2379.84 CPU=0:00:08.5 REAL=0:00:09.0)
Loading CTE timing window with TwiFlowType 0... (CPU = 0:00:00.0, REAL = 0:00:00.0, MEM = 2379.8M)
Add other clocks and setupCtoAAEClockMapping during iter 1
Loading CTE timing window is completed (CPU = 0:00:00.1, REAL = 0:00:00.0, MEM = 2379.8M)
Starting SI iteration 2
Start delay calculation (fullDC) (1 T). (MEM=2351.95)
Glitch Analysis: View av_func_mode_min -- Total Number of Nets Skipped = 0.
Glitch Analysis: View av_func_mode_min -- Total Number of Nets Analyzed = 26099.
Total number of fetched objects 26099
AAE INFO: Total number of nets for which stage creation was skipped for all views 0
AAE INFO-618: Total number of nets in the design is 26048, 0.0 percent of the nets selected for SI analysis
End delay calculation. (MEM=2391.12 CPU=0:00:00.1 REAL=0:00:00.0)
End delay calculation (fullDC). (MEM=2391.12 CPU=0:00:00.2 REAL=0:00:00.0)
*** Done Building Timing Graph (cpu=0:00:10.5 real=0:00:11.0 totSessionCpu=0:02:15 mem=2391.1M)

timeDesign Summary
Hold views included:
av_func_mode_min

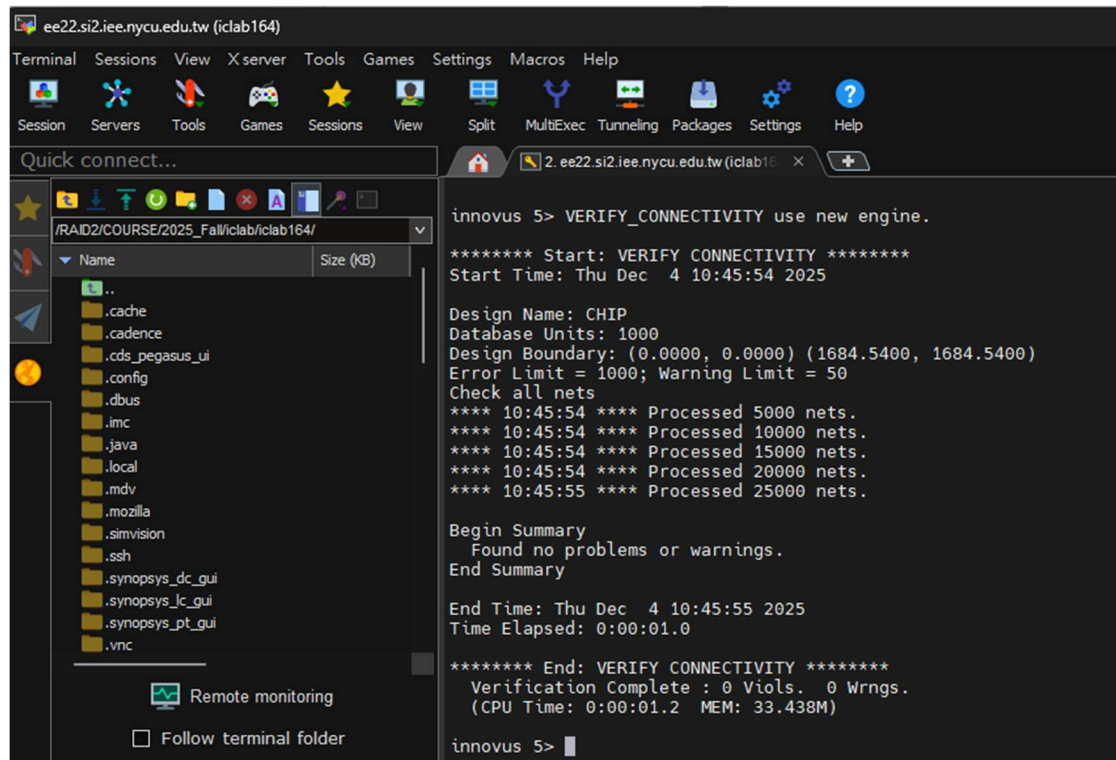
Hold mode | all | reg2reg | default |
WNS (ns): | 0.265 | 0.265 | 5.045 |
TNS (ns): | 0.000 | 0.000 | 0.000 |
Violating Paths: | 0 | 0 | 0 |
All Paths: | 1415 | 688 | 727 |

Density: 39.995%
(127.110% with Fillers)
Reported timing to dir timingReports
Total CPU time: 12.5 sec
Total Real time: 13.0 sec
Total Memory usage: 2314.382812 Mbytes
Reset AAE Options
*** timeDesign #2 [finish] : cpu/real = 0:00:12.5/0:00:12.8 (1.0), totSession cpu/real = 0:02:15.8/0:06:04.5 (0.4), mem = 2314.4M
Innovus >
```

## 6. DRC result :

The image shows a Kali Linux terminal window. At the top, there's a menu bar with options like Terminal, Sessions, View, Xserver, Tools, Games, Settings, Macros, Help. Below the menu is a toolbar with icons for Session, Servers, Tools, Games, Sessions, View, Split, Multitask, Tunneling, Packages, Settings, Help. The main terminal area displays a directory listing of /root/.ssh/ on the left, showing files like .cache, .cadence, .cds\_pegasus\_u, .config, .dbus, .enc, .java, .local, .mdv, .mvs, .nvidia, .omission, .ssh, .synopsis\_dc\_gui, .synopsis\_lc\_gui, .synopsis\_rc\_gui, .vnc, .2025\_F\_OT, Desktop, Documents, Downloads, lab01\_2025F, lab02, lab03, lab04, lab05\_2025F, lab06, lab07, lab08, lab09, lab10, lab11\_2025F, lab12\_2025F, Midterm\_Project\_2025, Music, nvidia-log, pdfs, Pictures, Public, Templates, /dev/shm, /dev/shm\_gives, Videos, .bash\_logout, .bash\_profile, .bashrc, .flexlerc, .history, .ICEauthority, .kshrc, .nfs0000000111633c2e0003..., .nfs0000000111223640036..., .nfs0000000111464c220004..., .nfs0000000111461c550003..., .nfs0000000111411c66004..., .nfs0000000111461c70003..., .nfs0000000111411c690006..., .verid\_onesearch\_history.log, .xauthority, .xsession-errors, .xsession.conf, .xsession.rc. The right side of the terminal shows a large output of 'VERIFY DRC' results for various sub-areas, including 'Sub-Area: {967.680 241.920 1209.600 483.840} 12 of 49', 'Sub-Area: {1209.600 241.920 1451.520 483.840} 13 of 49', 'Sub-Area: {1451.520 241.920 1684.540 483.840} 14 of 49', 'Sub-Area: {1684.540 241.920 1917.560 483.840} 15 of 49', 'Sub-Area: {1917.560 241.920 2150.580 483.840} 16 of 49', 'Sub-Area: {2150.580 241.920 2383.600 483.840} 17 of 49', 'Sub-Area: {2383.600 241.920 2616.620 483.840} 18 of 49', 'Sub-Area: {2616.620 241.920 2849.640 483.840} 19 of 49', 'Sub-Area: {2849.640 241.920 3082.660 483.840} 20 of 49', 'Sub-Area: {3082.660 241.920 3315.680 483.840} 21 of 49', 'Sub-Area: {3315.680 241.920 3548.700 483.840} 22 of 49', 'Sub-Area: {3548.700 241.920 3781.720 483.840} 23 of 49', 'Sub-Area: {3781.720 241.920 4014.740 483.840} 24 of 49', 'Sub-Area: {4014.740 241.920 4247.760 483.840} 25 of 49', 'Sub-Area: {4247.760 241.920 4480.780 483.840} 26 of 49', 'Sub-Area: {4480.780 241.920 4713.800 483.840} 27 of 49', 'Sub-Area: {4713.800 241.920 4946.820 483.840} 28 of 49', 'Sub-Area: {4946.820 241.920 5179.840 483.840} 29 of 49', 'Sub-Area: {5179.840 241.920 5412.860 483.840} 30 of 49', 'Sub-Area: {5412.860 241.920 5645.880 483.840} 31 of 49', 'Sub-Area: {5645.880 241.920 5878.900 483.840} 32 of 49', 'Sub-Area: {5878.900 241.920 6111.920 483.840} 33 of 49', 'Sub-Area: {6111.920 241.920 6344.940 483.840} 34 of 49', 'Sub-Area: {6344.940 241.920 6577.960 483.840} 35 of 49', 'Sub-Area: {6577.960 241.920 6810.980 483.840} 36 of 49', 'Sub-Area: {6810.980 241.920 7044.000 483.840} 37 of 49', 'Sub-Area: {7044.000 241.920 7277.020 483.840} 38 of 49', 'Sub-Area: {7277.020 241.920 7510.040 483.840} 39 of 49', 'Sub-Area: {7510.040 241.920 7743.060 483.840} 40 of 49', 'Sub-Area: {7743.060 241.920 7976.080 483.840} 41 of 49', 'Sub-Area: {7976.080 241.920 8209.100 483.840} 42 of 49', 'Sub-Area: {8209.100 241.920 8442.120 483.840} 43 of 49', 'Sub-Area: {8442.120 241.920 8675.140 483.840} 44 of 49', 'Sub-Area: {8675.140 241.920 8908.160 483.840} 45 of 49', 'Sub-Area: {8908.160 241.920 9141.180 483.840} 46 of 49', 'Sub-Area: {9141.180 241.920 9374.200 483.840} 47 of 49', 'Sub-Area: {9374.200 241.920 9607.220 483.840} 48 of 49', 'Sub-Area: {9607.220 241.920 9840.240 483.840} 49 of 49'. The terminal also shows a 'Verification Complete : 0 Viols.' message and a 'Remote monitoring' window at the bottom.

## 7. LVS result :



The screenshot shows a remote terminal window titled "ee22.si2.iese.nycu.edu.tw (iclab164)". The interface includes a menu bar (Terminal, Sessions, View, Xserver, Tools, Games, Settings, Macros, Help) and a toolbar with icons for Session, Servers, Tools, Games, Sessions, View, Split, MultiExec, Tunneling, Packages, Settings, and Help. A "Quick connect..." bar is visible. On the left, a file explorer shows the directory "/RAID2/COURSE/2025\_Fall/iclab/iclab164/" with a list of files and folders including .cache, .cadence, .cds\_pegasus\_ui, .config, .dbus, .imc, .java, .local, .mdv, .mozilla, .simvision, .ssh, .synopsys\_dc\_gui, .synopsys\_ic\_gui, .synopsys\_pt\_gui, and .vnc. At the bottom left, there are checkboxes for "Remote monitoring" (checked) and "Follow terminal folder" (unchecked). The main terminal area displays the following output:

```
innovus 5> VERIFY_CONNECTIVITY use new engine.

***** Start: VERIFY CONNECTIVITY *****
Start Time: Thu Dec 4 10:45:54 2025

Design Name: CHIP
Database Units: 1000
Design Boundary: (0.0000, 0.0000) (1684.5400, 1684.5400)
Error Limit = 1000; Warning Limit = 50
Check all nets
**** 10:45:54 **** Processed 5000 nets.
**** 10:45:54 **** Processed 10000 nets.
**** 10:45:54 **** Processed 15000 nets.
**** 10:45:54 **** Processed 20000 nets.
**** 10:45:55 **** Processed 25000 nets.

Begin Summary
Found no problems or warnings.
End Summary

End Time: Thu Dec 4 10:45:55 2025
Time Elapsed: 0:00:01.0

***** End: VERIFY CONNECTIVITY *****
Verification Complete : 0 Viols. 0 Wrngs.
(CPU Time: 0:00:01.2 MEM: 33.438M)

innovus 5>
```

## 8. Post Layout simulation result :

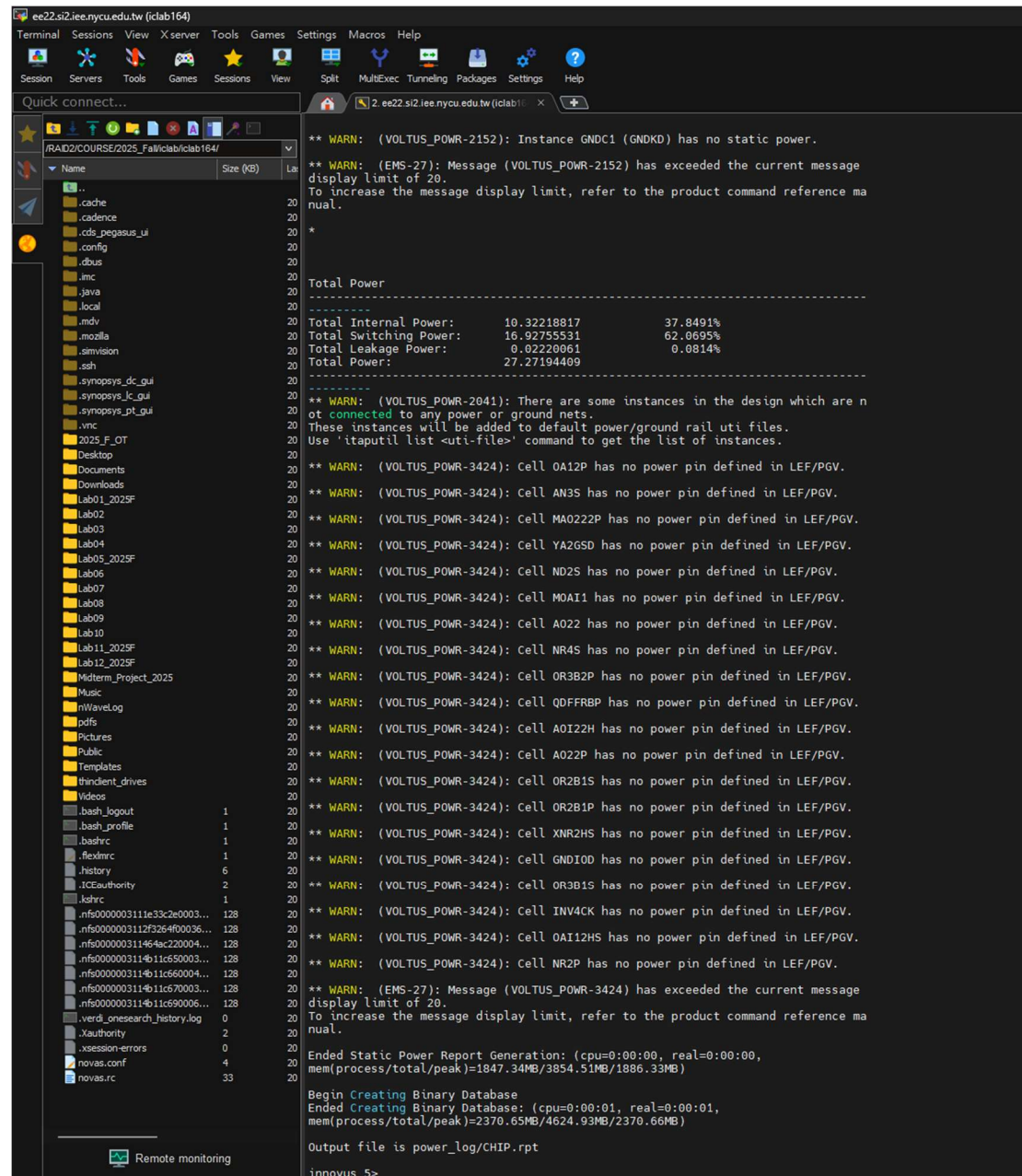
Terminal window showing the execution of a Verilog simulation. The terminal title is 'ee222.siz@nyu.edu: ~'. The left sidebar shows a file manager view of the directory '/home/ee222.siz/.ssh'. The main window displays the output of a Verilog simulation, including a list of variables and their values, a large 'PASS' message, and simulation statistics.

```

No. 971 PASS
No. 972 PASS
No. 973 PASS
No. 974 PASS
No. 975 PASS
No. 976 PASS
No. 977 PASS
No. 978 PASS
No. 979 PASS
No. 980 PASS
No. 981 PASS
No. 982 PASS
No. 983 PASS
No. 984 PASS
No. 985 PASS
No. 986 PASS
No. 987 PASS
No. 988 PASS
No. 989 PASS
No. 990 PASS
No. 991 PASS
No. 992 PASS
No. 993 PASS
No. 994 PASS
No. 995 PASS
No. 996 PASS
No. 997 PASS
No. 998 PASS
No. 999 PASS
No. 1000 PASS
...
PASS
...
Congratulations!
execution cycles = 50000
clock period = 11.000000ns
$finish called from file "PATTERN.v", line 118.
$finish at simulation time 1003228500
VCS Simulation Report
Time: 1003228500 ps
CPU Time: 4.10:50:46.2025
Data structure size: 8.1Mb
Verilog Dec 3:40:50:46.2025
CPU time: 3.60 seconds to compile + 1.377 seconds to elab + .832 seconds to link + 23.015 seconds in simulation
  
```



## 9. Power result :

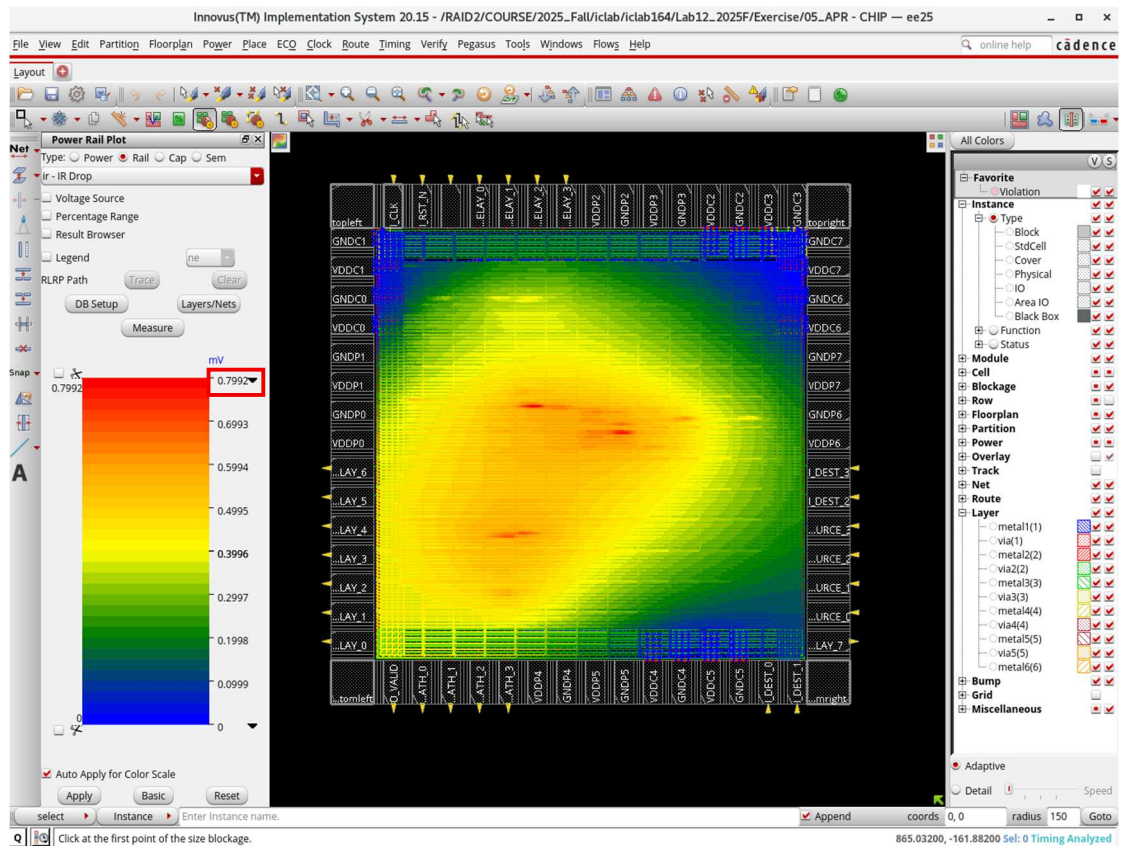


```
ee22.si2.jee.nycu.edu.tw (iclab164)
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect...
Name Size (KB) La
.cache 20
.cadence 20
.cds_pegasus_ui 20
.config 20
.dbus 20
.imc 20
.java 20
.local 20
.mdu 20
.mozilla 20
.simvision 20
.ssh 20
.synopsys_dc_gui 20
.synopsys_ic_gui 20
.synopsys_pl_gui 20
.vnc 20
2025_F_OT 20
Desktop 20
Documents 20
Downloads 20
lab01_2025F 20
lab02 20
lab03 20
lab04 20
lab05_2025F 20
lab06 20
lab07 20
lab08 20
lab09 20
lab10 20
lab11_2025F 20
lab12_2025F 20
Midterm_Project_2025 20
Music 20
nWaveLog 20
pdfs 20
Pictures 20
Public 20
Templates 20
trident_drives 20
videos 20
.bash_logout 1
.bash_profile 1
.bashrc 1
.flexmrc 1
.history 6
.ICEauthority 2
.kshrc 1
.mfs0000003111e33c2e0003... 128
.mfs0000003112f3264f00036... 128
.mfs000000311464ac220004... 128
.mfs0000003114b11c650003... 128
.mfs0000003114b11c660004... 128
.mfs0000003114b11c670003... 128
.mfs0000003114b11c690006... 128
.verdi_oneseach_history.log 0
.xauthority 2
.xsession-errors 0
.novas.conf 4
.novas.rc 33

** WARN: (VOLTUS_POWR-2152): Instance GNDK1 (GNDKD) has no static power.
** WARN: (EMS-27): Message (VOLTUS_POWR-2152) has exceeded the current message
display limit of 20.
To increase the message display limit, refer to the product command reference ma
nual.
*
Total Power
-----
Total Internal Power: 10.32218817 37.8491%
Total Switching Power: 16.92755531 62.0695%
Total Leakage Power: 0.02220061 0.0814%
Total Power: 27.27194409
-----
** WARN: (VOLTUS_POWR-2041): There are some instances in the design which are n
ot connected to any power or ground nets.
These instances will be added to default power/ground rail uti files.
Use 'ttaputil list <uti-file>' command to get the list of instances.
** WARN: (VOLTUS_POWR-3424): Cell OA12P has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell AN3S has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell MA0222P has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell YA2GSD has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell ND2S has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell MOAI1 has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell A022 has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell NR4S has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell OR3B2P has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell QDFFRBP has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell AOI22H has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell A022P has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell OR2B1S has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell OR2B1P has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell XNR2HS has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell GNDI0D has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell OR3B1S has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell INV4CK has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell OAI12HS has no power pin defined in LEF/PGV.
** WARN: (VOLTUS_POWR-3424): Cell NR2P has no power pin defined in LEF/PGV.
** WARN: (EMS-27): Message (VOLTUS_POWR-3424) has exceeded the current message
display limit of 20.
To increase the message display limit, refer to the product command reference ma
nual.
Ended Static Power Report Generation: (cpu=0:00:00, real=0:00:00,
mem(process/total/peak)=1847.34MB/3854.51MB/1886.33MB)
Begin Creating Binary Database
Ended Creating Binary Database: (cpu=0:00:01, real=0:00:01,
mem(process/total/peak)=2370.65MB/4624.93MB/2370.66MB)
Output file is power_log/CHIP.rpt
innovus 5>
```

## 10. IR Drop Results :



IR drop 最大值為 **0.7992 mV**  $< 1 \text{ mV} < 0.1 \text{ V}$

增加更多 power pad / ring / stripe 等可以改善 IR drop 。  
跟 Lab11 相比，在 Lab 12 我用了兩倍的 power pad 。