



Superlint Tutorial

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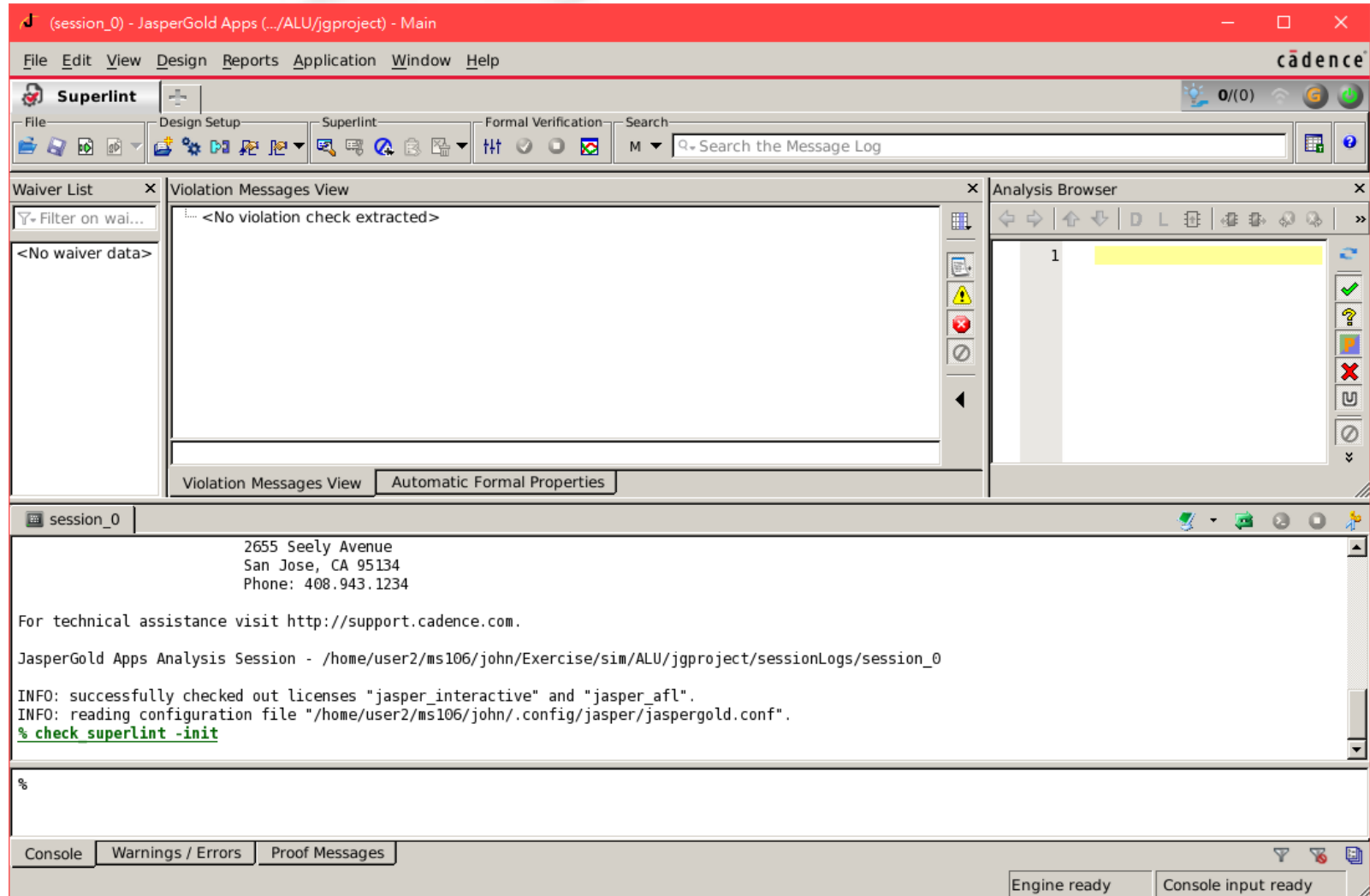
Speaker: Willie

Date: 2022/09/07



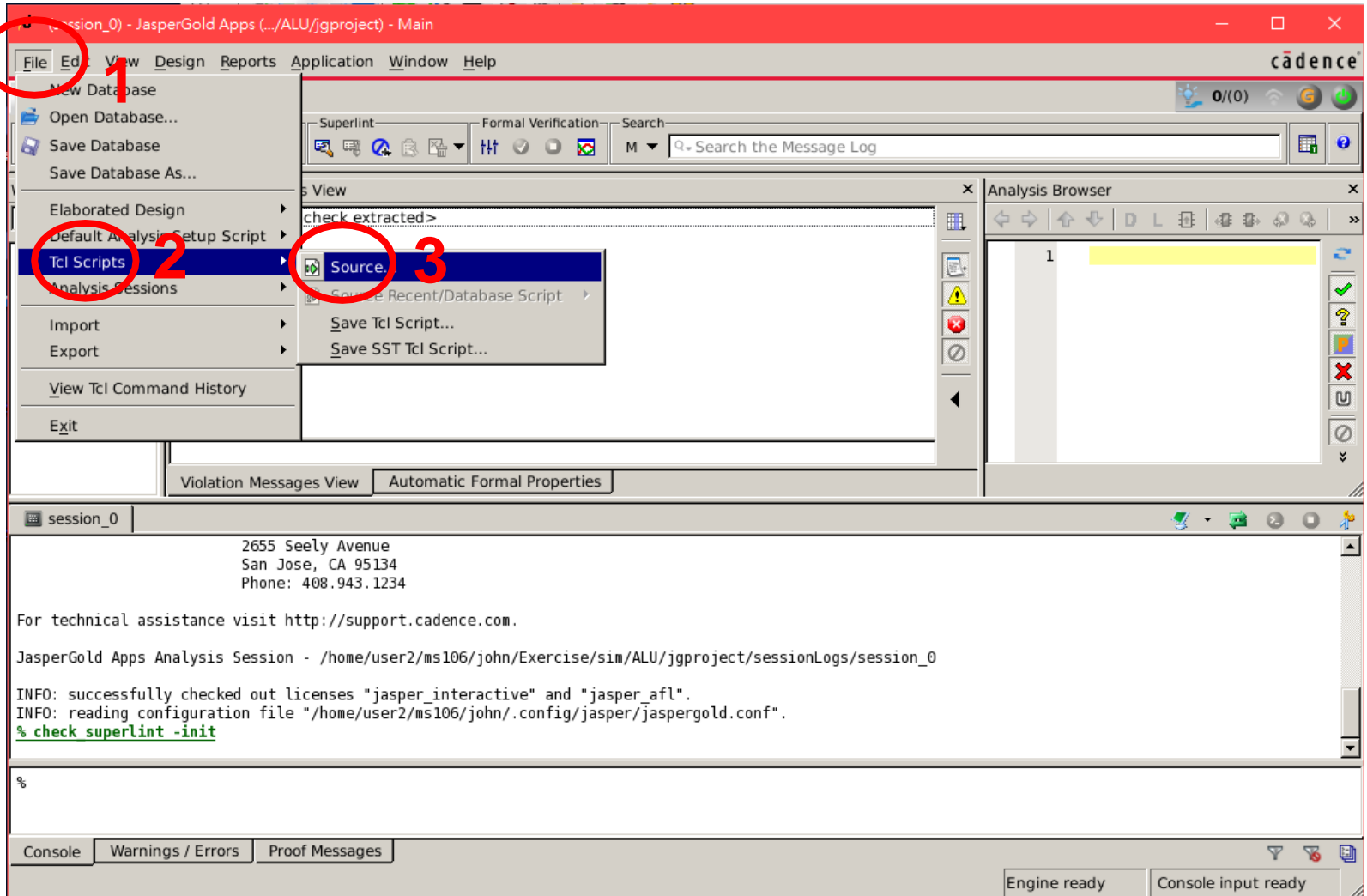
Start Superlint

- **>>jg -superlint (or >>jg -superlint superlint.tcl)**

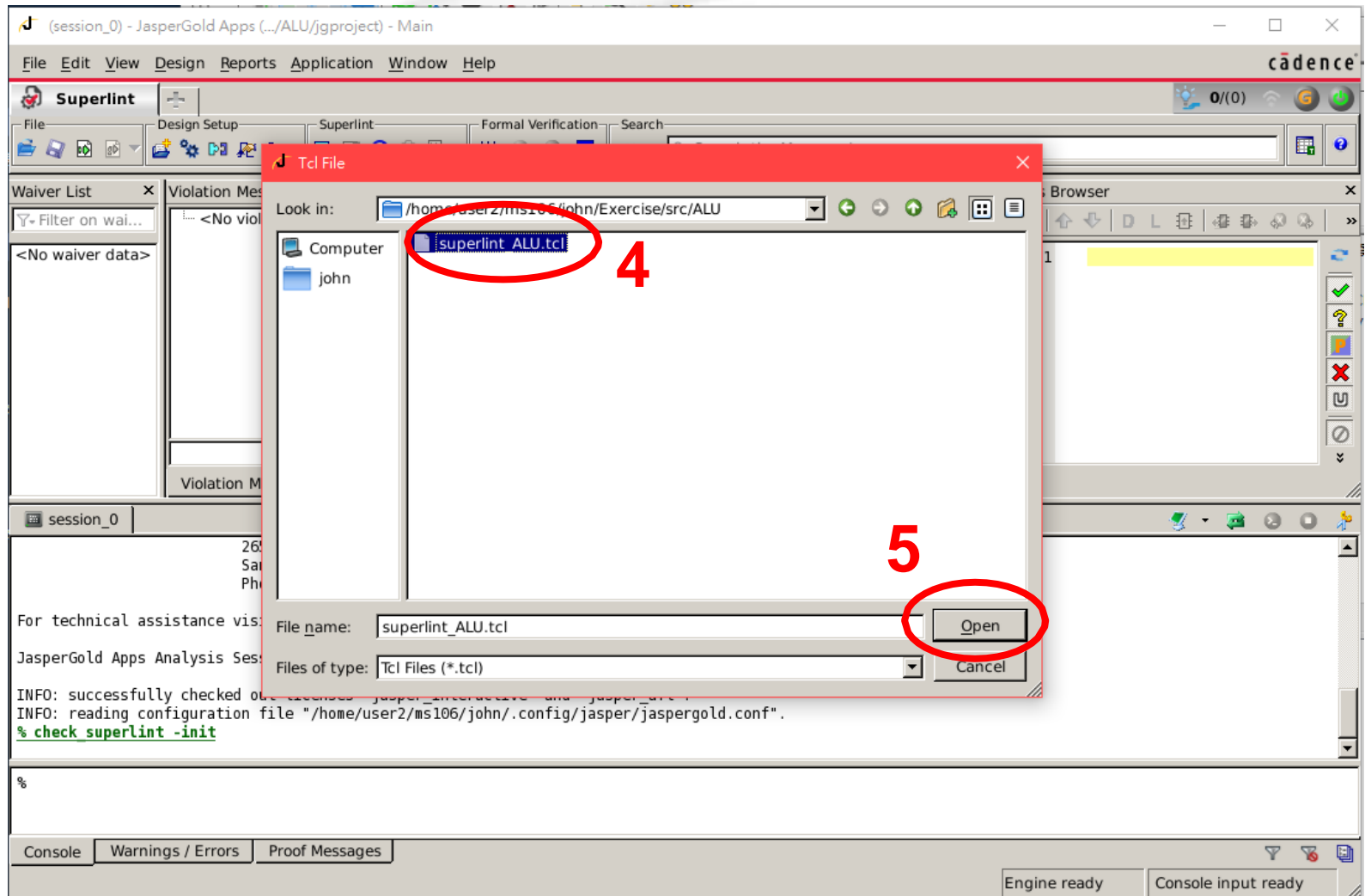


Import Rule(1/2)

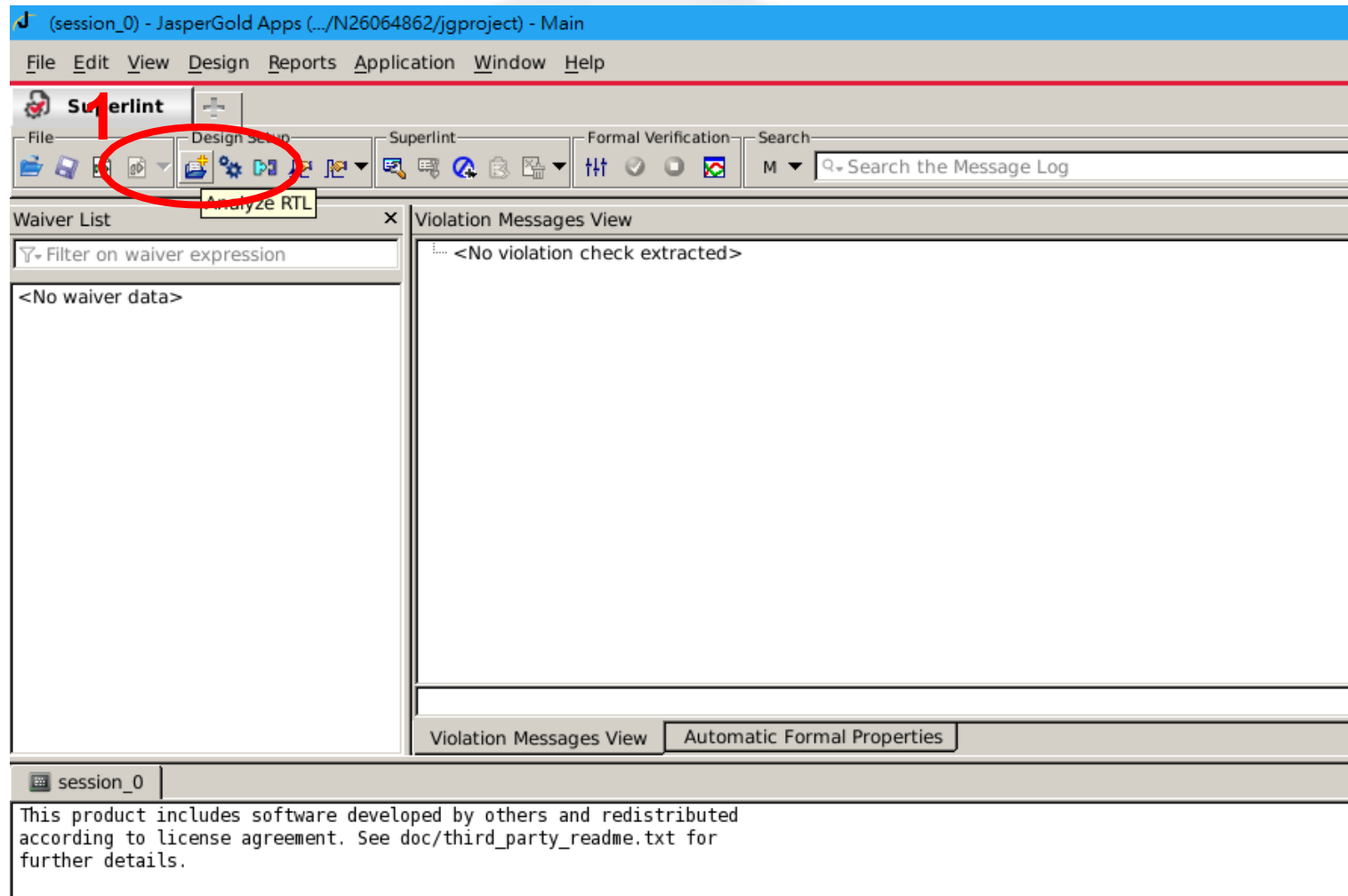
- **File -> Tcl Scripts -> Source**



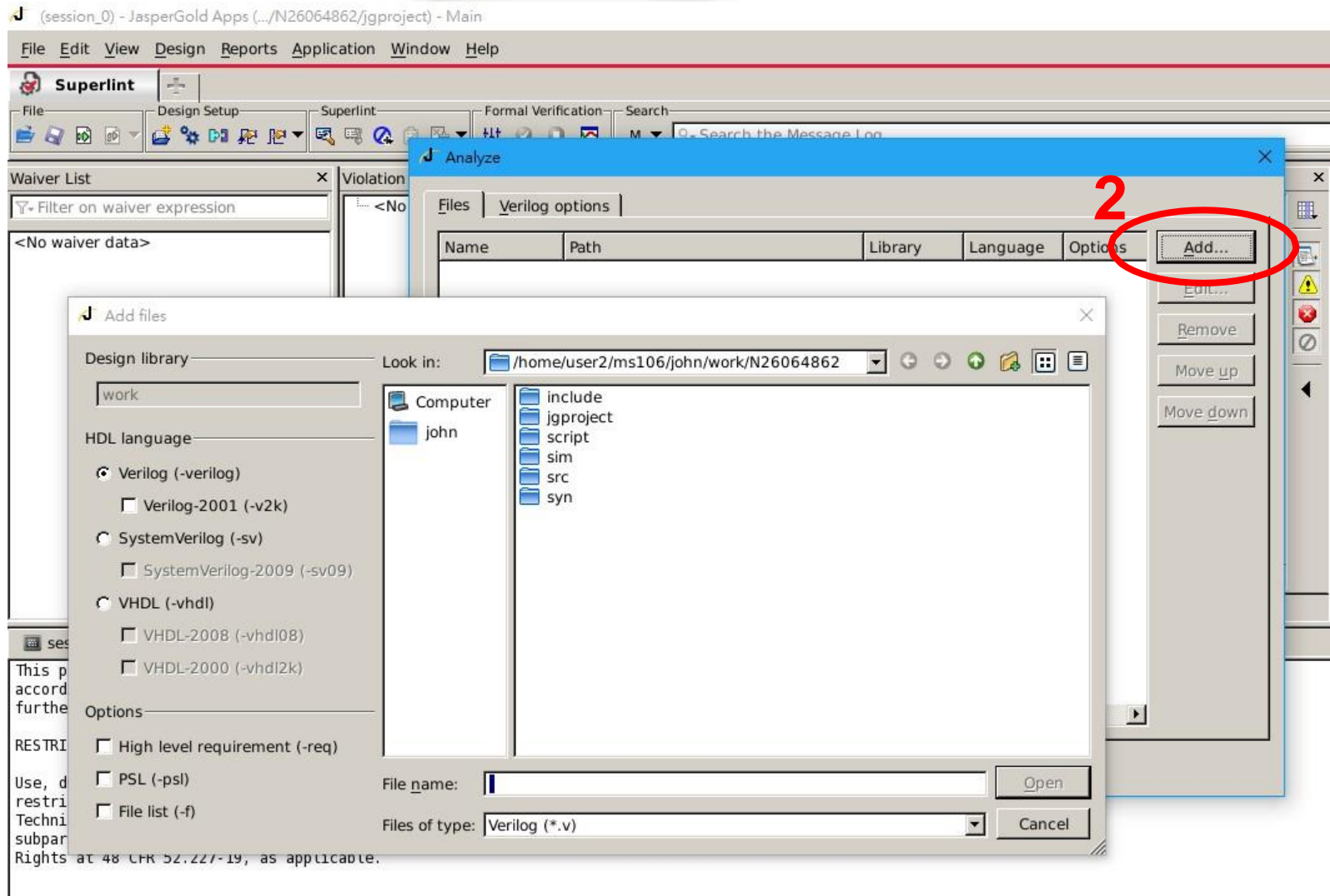
Import Rule(2/2)



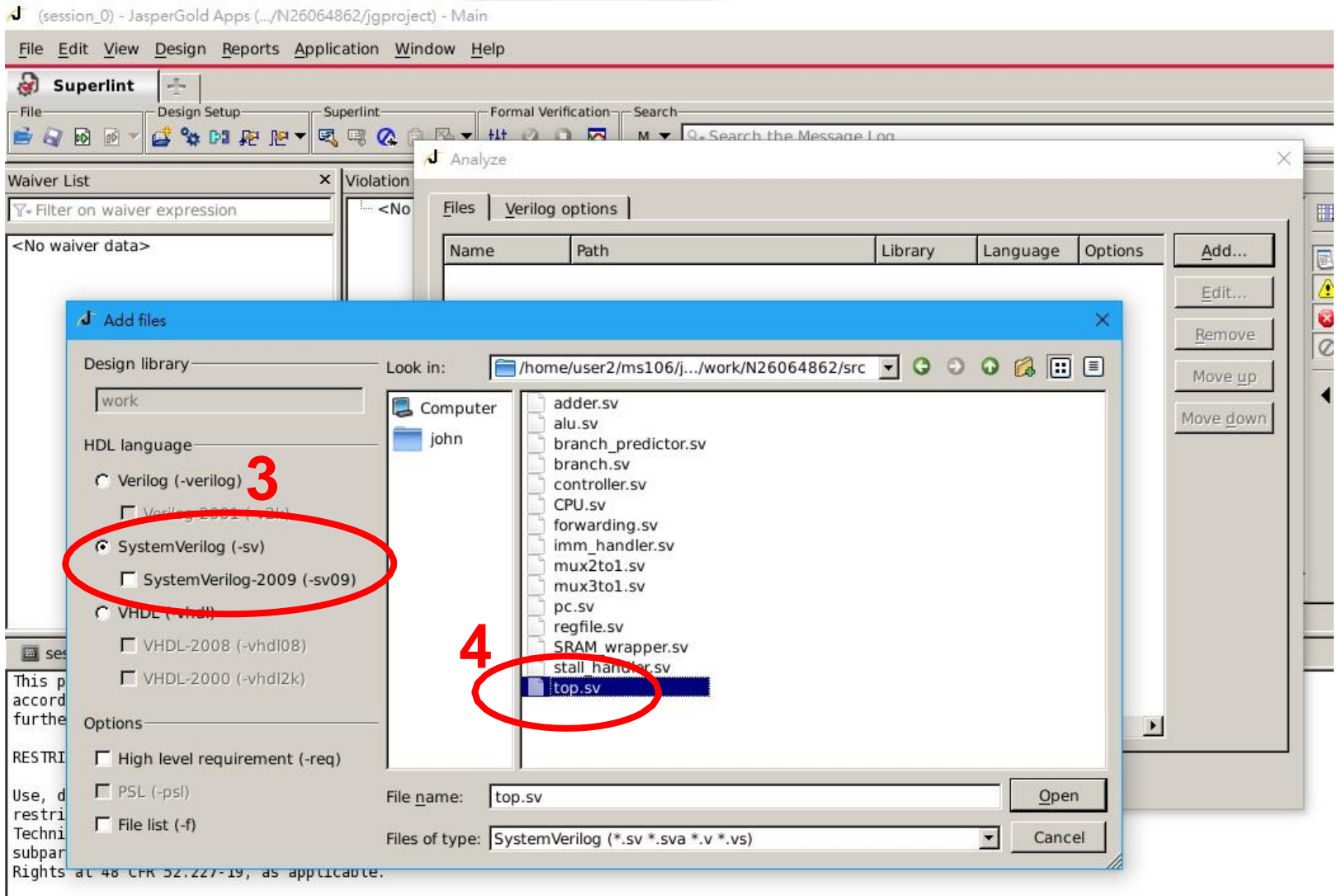
Import Design (1/4)



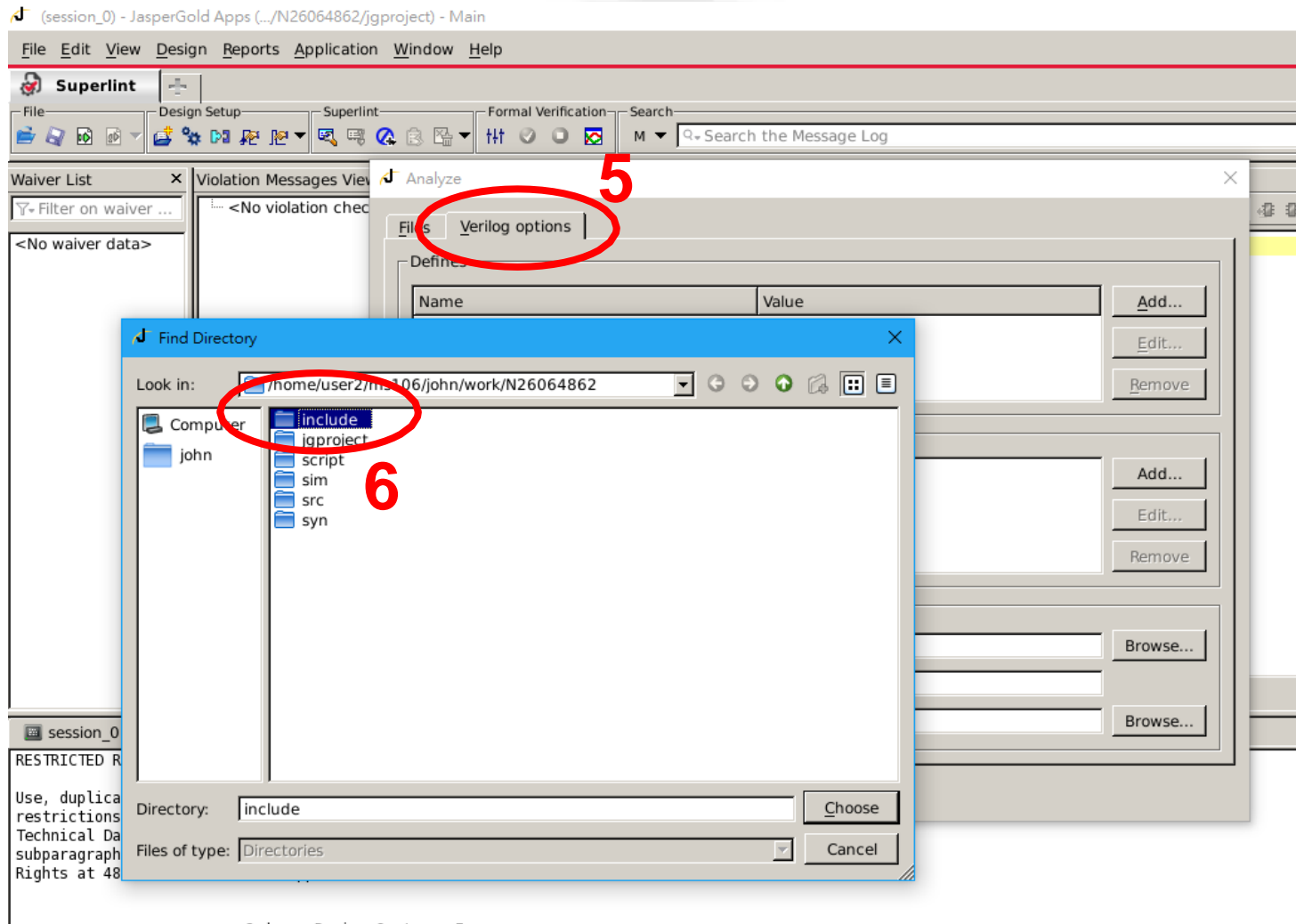
Import Design (2/4)



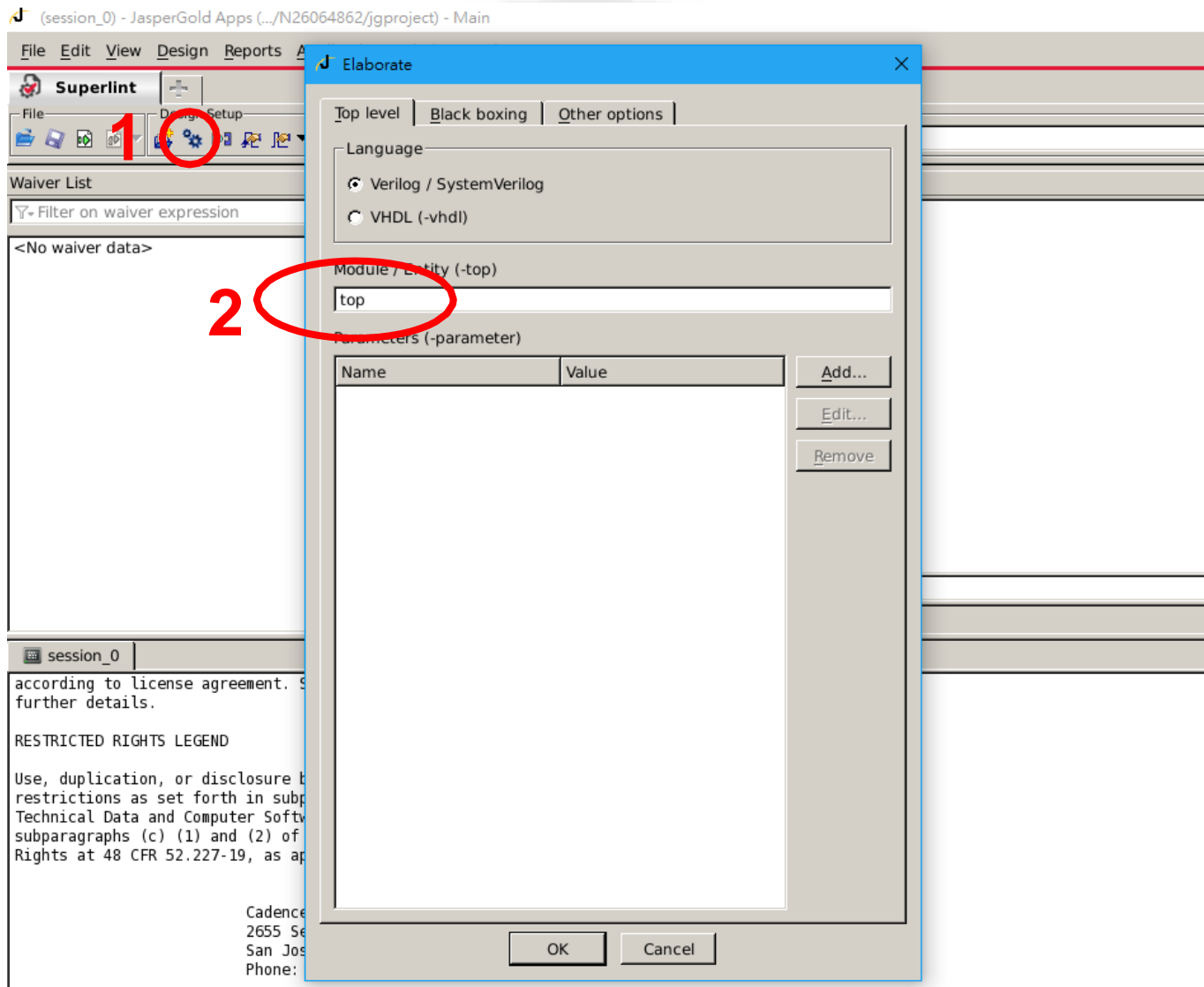
Import Design (3/4)



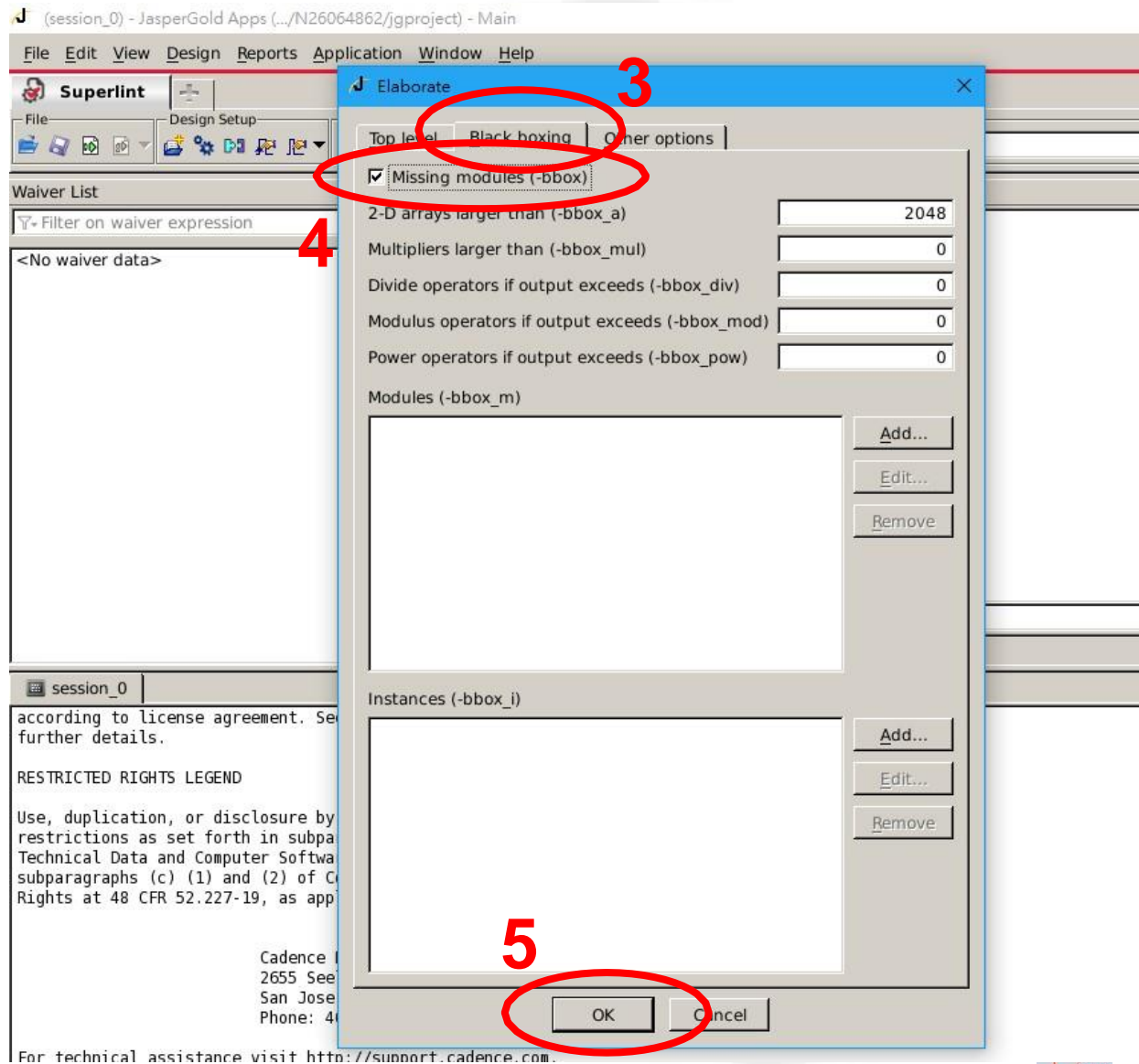
Import Design (4/4)



Elaborate (1/2)



Elaborate (2/2)



Set Clock

J (session_0) - JasperGold Apps (.../N26064862/jgproject) - Main

File Edit View Design Reports Application Window Help

Superlint

File Design Setup Superlint Formal Verification Search

M Search the Message Log

Waiver List Violation Messages View Analysis Browser

J (session_0) - JasperGold Apps (.../N26064862/jgproject) - Clock Viewer

<No File Edit Tools Window Help

CACRPDDR Search the Clocking Signals Table

Simple Inactive Gated Complex

Clocking Signals

Filter on Name

Name	Clock Type	Primary Clock	Sanity Check
clk			Clear

- Declare Clock...
- Waive Clock
- Remove Waiver
- Show Sanity Check Details
- View COI in Schematic
- Show Load
- Show Driver

Clock Info	Aliases	Connected Drivers	Registers	Properties
Edge Sense				posedge
Both Edges				false
Status				defined
Number of Connected PSL/SVA Flops				2
Number of Connected Design Flops				1399

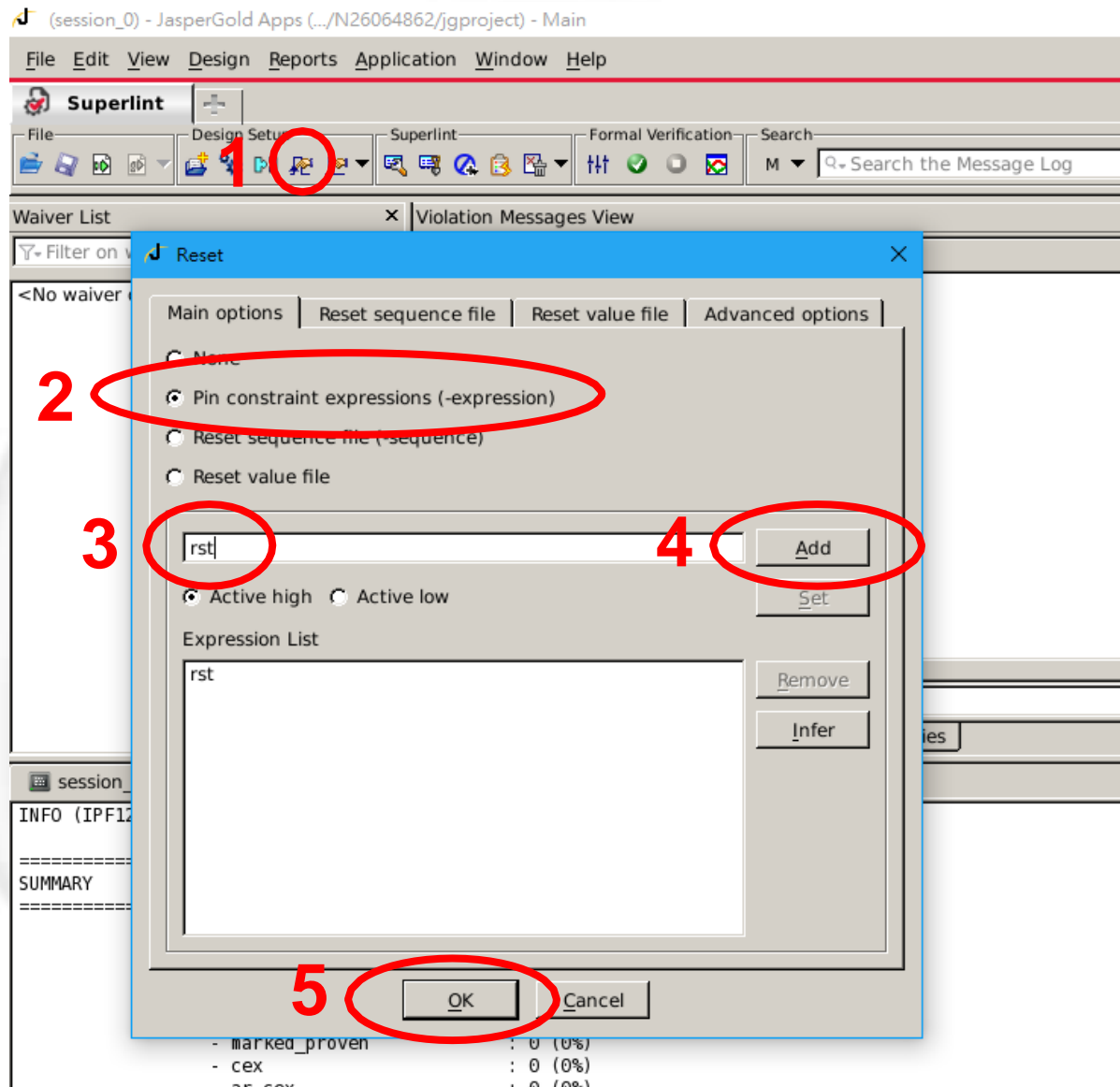
Total: 1

Clocking Signals Declared Clocks Design Constants

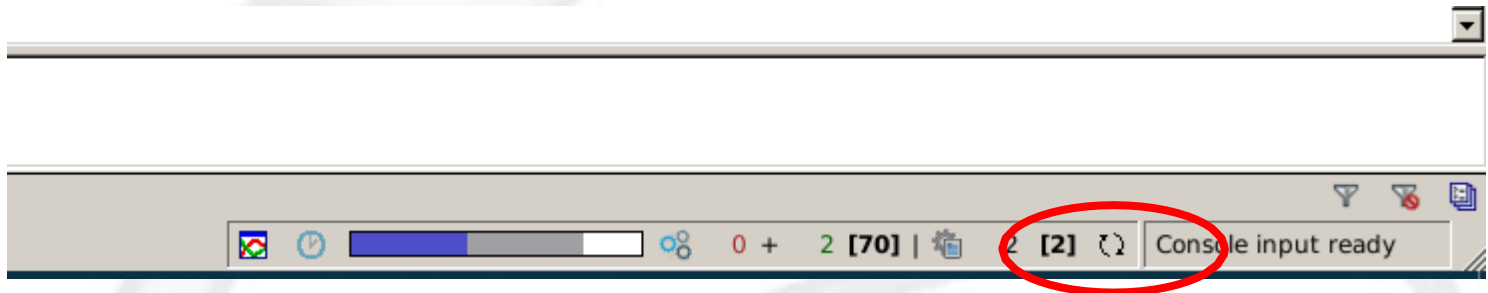
unreachable : 0

Tool Ready

Set Reset



Busy state



Error & Warning Information(1/3)

The screenshot displays the Cadence Superlint tool interface. The main window is titled "superlint_ALU.tcl (session_0) - JasperGold Apps (.../ALU/jgproject) - Main". The interface includes a menu bar (File, Edit, View, Design, Reports, Application, Window, Help) and a toolbar with icons for various functions. The "Violation Messages View" is active, showing a list of violations. A red box highlights the following messages:

- Category: NAMING (1)
- Category: CODINGSTYLE (18)
- Tag: CAS_NR_UCIT (6)
- "Unequal length in case item comparison (selector is 4 bits,
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- "Unequal length in case item comparison (selector is 4 bits,
- "Unequal length in case item comparison (selector is 4 bits,
- Tag: OPR_NR_UCMP (2)
- "Unequal length operands in equality operator encountere
- "Unequal length operands in equality operator encountere
- Tag: ASG_NS_TRNB (10)
- Category: STRUCTURAL (3)

The "Analysis Browser" on the right shows the code being analyzed, which is an ALU module. The code includes parameters, inputs, outputs, and logic blocks. The bottom status bar indicates "Engine ready" and "Console input ready".

Error & Warning Information

Error & Warning Information(2/3)

The screenshot displays the Cadence Superlint tool interface. The main window is titled "superlint_ALU.tcl (session_0) - JasperGold Apps (.../ALU/jgproject) - Main". The interface includes a menu bar (File, Edit, View, Design, Reports, Application, Window, Help) and a toolbar. The "Violation Messages View" pane on the left shows a list of violations, including "Unequal length in case item comparison (selector is 4 bits, ...)" and "Unequal length operands in equality operator encountered". The "Analysis Browser" pane on the right shows the source code for "ALU.sv", which includes a parameter declaration and a logic block. A red circle highlights the "Analysis Browser" pane. The bottom status bar indicates "Engine ready" and "Console input ready".

superlint_ALU.tcl (session_0) - JasperGold Apps (.../ALU/jgproject) - Main

File Edit View Design Reports Application Window Help

Superlint

Design Setup Superlint Formal Verification Search

Q Search the Message Log

Waiver List Violation Messages View Analysis Browser

Filter on waiver e...<No waiver data>

Description (Order by Category)

Category: NAMING (1)
Category: CODINGSTYLE (18)
Tag: CAS_NR_UCIT (6)
"Unequal length in case item comparison (selector is 4 bits,
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Tag: OPR_NR_UCMP (2)
"Unequal length operands in equality operator encountere
"Unequal length operands in equality operator encountere
Tag: ASG_NS_TRNB (10)
Category: STRUCTURAL (3)

Violation Messages View Automatic Formal Properties

session_0

- unknown : 12 (100%)
- error : 0 (0%)
background (thread 1)

[<embedded>] %

Console Warnings / Errors Proof Messages

Engine ready Console input ready

```
4 parameter OSize = 3;  
5  
6 input enable;  
7 input [DSize-1:0] src1 , src2;  
8 input [OSize:0] OP;  
9  
10 output logic [DSize-1:0] alu_result ;  
11 output logic Overflow;  
12  
13 logic [2*DSize-1:0] temp;  
14  
15 assign temp = {src1 , src2} >>{src1 %  
16  
17 always_comb begin  
18     if(enable)begin  
19         case(OP)  
20             3'b000 :begin  
21                 alu re
```


Error & Warning Information(3/3)

➤ Let's check >> [jaspergold_superlint_reference.pdf](#)

CAS_NR_UCIT

Short Message: *Unequal length in case item comparison (selector is %d bits, case tag expression is %d bits) in module/design-unit %s.*

Severity	Warning
Description	A case tag expression was found to have a width, which was inconsistent with the case selector. This can result in unexpected comparison results in simulation and/or synthesis. It is recommended that all case tag expressions are specified with the same width as the case selector.

The following code illustrates the occurrence of CAS_NR_UCIT.

```
module uneq_length_case_item (a, b, c, sel, out1);
  input a;
  input b;
  input c;
  input [3:0] sel;
  output out1;
  reg out1;
  always @(a or b or c or sel)
```

The screenshot shows the JasperGold Superlint interface. The 'Violation Messages View' pane is active, displaying a list of violations. A red circle highlights the message: "Unequal length in case item c". The message is categorized under 'Category: CODINGSTYLE (28)' and 'Tag: CAS_NR_UCIT (6)'. Other violations include "Unequal length in case item c", "Unequal length in case item c", "Unequal length in case item c", "Unequal length in case item c", "Unequal length in case item c", "Unequal length operands in e", and "Unequal length operands in e". The interface also shows a summary of violations at the bottom: 12 (100%) for 'unknown' and 0 (0%) for 'error'.

Warning example

- ✓ OPR_NR_UCMP
- ✓ ASG_MS_RPAD
- ✓ OPR_NR_UEOP
- ✓ ASG_NS_TRNB
- Let's check superlint.tcl



Thank you for your attention!!