Creating the Verification Plan for Calc1

Calc1 basic function tests

Test reference number	Test description
1.1	Check the basic command-response protocol on each of the four ports.
1.2	Check the basic operation of each command on each port.
1.3	Check overflow and underflow cases for add and subtract commands.

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Calc1 advanced function tests

Test reference Number	Test Description
2.1.1	For each port, check that each command can have any command follow it without leaving the state of the design dirty, such that the following command is corrupted.
2.1.2	Across all ports (e.g., four concurrent adds do not interfere with each other), check that each command can have any command follow it without leaving the state of the design dirty, such that the following command is corrupted.
2.2	Check that there is fairness across all four ports such that no port has higher priority than the others.
2.3	Check that the high-order 27 bits are ignored in the second operand of both shift commands.

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Calc1 advanced function tests

Test reference Number	Test Description
2.4.1	Data dependent corner case: Add two numbers that overflow by 1 ("FFFFFFFF"X + 1).
2.4.2	Data dependent corner case: Add two numbers whose sum is "FFFFFFFF"X.
2.4.3	Data dependent corner case: Subtract two equal numbers.
2.4.4	Data dependent corner case: Subtract a number that underflows by 1 (Operand2 is one greater than Operand1).
2.4.5	Data dependent corner case: Shift 0 places (should return Operand1 unchanged).
2.4.6	Data dependent corner case: Shift 31 places (the max allowable shift places).
2.5	Check that the design ignores data inputs unless the data are supposed to be valid (concurrent with the command and the following cycle). Remember that "00000000"X is a data value just as any other 32- bit combination. Here, the check must include verifying that the design latches the data only when appropriate, and does not key off nonzero data.

Creating the Verification Plan for Calc1

Calc1 Generic tests and checks

Test reference number	Test description
3.1	Check that the design correctly handles illegal commands.
3.2	Check all outputs all of the time. Calc1 should not generate superfluous output values.
3.3	Check that the reset function correctly resets the design.