* Design for Multiplication:-

INPUT1 (16-bit)

MULTIPLY

Result (32-bit)

INPUT2 (16-Bit)

Output (16-bit) = Result( sf+15 downto sf)

Comparator

Result (31 downto 19)

overflow

1. Assumption:

* Constant scale factor for inputs and outputs equals 4-bits.

1. Limitations:

* To be in safe zone, Number of bits in integer parts equal 6- bits, So I can take the result 12 bits and doesn’t occur overflow.

1. Validation:

* Overflow flag set to ‘1’ if there is overflow.
* Overflow doesn’t occur, if the sign bit extend in output in all the rest of bits on the right.