

ME Module Exponent Handling For Reciprocal Approximation

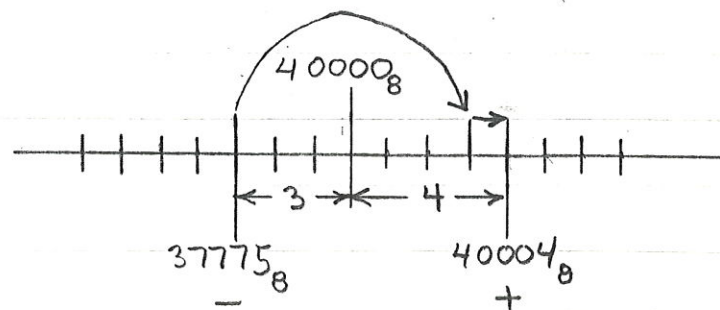
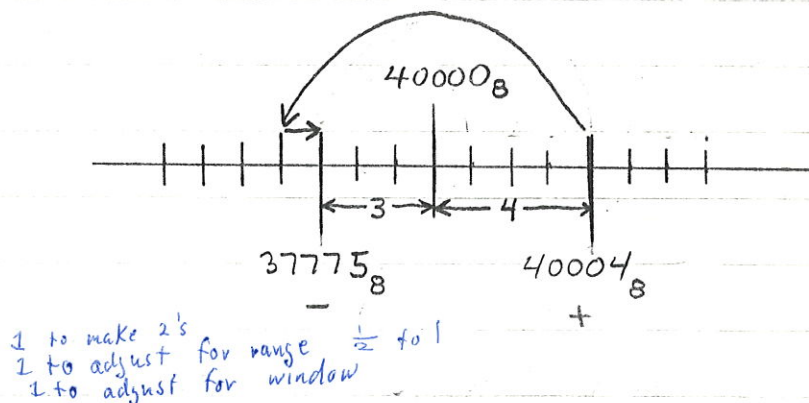
Steps on the ME module:

1. k operand exponent from the VRs (no j operand, bit 0 via RA)
2. Remove bias (toggle bit 2^{14} of exponent)
3. Complement k exponent ($2^x = 1/2^{-x}$)
4. Force j exponent to +3 (2's comp, normalization, range)
5. Add exponents ($k+3$)
6. -1 via normalization path (always takes this path)
7. Restore bias (toggle bit 2^{14} of exponent)

Examples:

$k \text{ exponent} = 40004_8$
 $\text{remove bias} = 00004_8$
 $\text{complement } k = 77773_8$
 $k+3 = 77776_8$
 $-1 \text{ normalization} = 77775_8$
 $\text{restore bias} = 37775_8$

$k \text{ exponent} = 37775_8$
 $\text{remove bias} = 77775_8$
 $\text{complement} = 00002_8$
 $k+3 = 00005_8$
 $-1 \text{ normalization} = 00004_8$
 $\text{restore bias} = 40004_8$



In either case you go across the zero exponent point of the number line and then add one. This plus one is due to the range of numbers in which we solve for our result.