The Complete Square Root Sequence

Find $\sqrt{S1}$: $\sqrt{S1} = S1\ (1/\sqrt{S1})$

1. $S2 = 1/\sqrt{S1}$ — Use the reciprocal square root approximation instruction to calculate the approximate reciprocal square root of the original operand.

133 or 167

2. $S3 = S1 * S2$ — Use the multiply instruction and multiply the original operand by the approximate reciprocal square root to obtain a half precision square root value for the original operand.

124 125 134 135

3. $S4 = [3 - (S2 * S3)]/2$ — Use the reciprocal square root iteration instruction to obtain a correction factor which when multiplied by the half precision square root will result in a full precision square root value accurate to 46 bits.

127 or 157

4. $S5 = S3 * S4$ — Use the multiply instruction and multiply the half precision square root result by the correction factor to obtain the full precision square root of the original operand.

MULT