

Jan 22, 58
116A

What is expected difference for one test bit of precision?

sample	1100XXXX	110XXXXX
8 bits		7 bits
minimum	11 00 0000	110 0000
maximum	11 00 1111	110 1111
average	11 00 0111(1)	11 00111(1)

diff. of average

$$\begin{array}{r} 1100111(1) \\ - 1100011(1) \\ \hline 0000111(1) \end{array}$$

← zeros only

Different cases give for average.

- Set to zero 1100 0000
- Insert & clear 1101 0000
- add 1's 1100 1111 ↑ same as average case

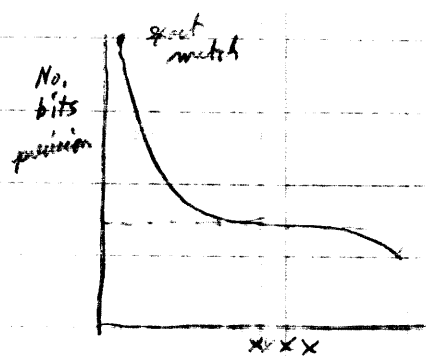
Making two sums could differ by:

$$1100 0000 - 110 1111 = 000 1111 \quad \text{max.}$$

$$1100 0000 - 110 0000 = 0 \quad \text{min.}$$

would indicate 3-bit precision
would indicate 8-bit precision
aka. This should be 4

YYY=1111	YYY=1000	1100YYYY	110XXXXX	precision
0111 4	0100 5	0000 8 bits		
0110 5	0011 5	0001 7 bits		
0101 5	0010 6	0010 6		
0100 5	0001 7	0011 7		
0011 5	0000 8	0100 5		
0010 6	0001 7	0101 5		
0001 7	0010 6	0110 5		
0000 8	0011 5	0111 4		
0001 7	0100 5	1000 4		
0010 6	0101 5	1001 4		
0011 5	0110 5	1010 4		
0100 5	0111 4	1011 4		
0101 5	1000 4	1100 4		
0110 5	1001 4	1101 4		
0111 4	1010 4	1110 4		
1000 4	1011 4	1111 3		
ave = 5.375	ave = 5.25	ave = 4.75		



ave = 4.75 bits

In case of slope in bits this