

Домашняя работа №7

1. Перевод в формат Ф1:

$$A = 3,7_{10} = 3,В(3)_{16} = 0,3В(3)_{16} \cdot 16^1$$

0	1	0	0	0	0	0	1	0	0	1	1	1	0	1	1	0	0	1	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$B = 0,015_{10} = 0,03D70A_{16} = 0,3D70A_{16} \cdot 16^{-1}$$

0	0	1	1	1	1	1	1	0	0	1	1	1	1	0	1	0	1	1	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

2. Умножение операндов в формате Ф1, используя метод ускоренного умножения мантисс на два разряда множителя.

$$\begin{array}{r} X_A = 1000001 \\ + \\ X_B = 0111111 \\ \hline \end{array}$$

$$X_A + X_B = 10000000$$

$$d = 1000000$$

$$X_C = 1000000$$

$$P_C = 0$$

№	Операнды	СЧП (старшие разряды)	СЧП (младшие)	Признак коррекции
0	СЧП	0000000000000000	0011110101 11	0
1	-A	111110001001101	-A	1
	СЧП	111110001001101	001111010111	
	СЧП -> 2	111111100010011	01 00111101 01	
2	+2A	000011101100110	+2A	0
	СЧП	000011001111001	01 0011110101	
	СЧП -> 2	000000110011110	0101 001111 01	
3	+A	000001110110011	+A	0
	СЧП	000010101010001	0101 00111101	
	СЧП -> 2	000000101010100	010101 0011 11	
4	-A	111110001001101	-A	1

	СЧП	1 1 1 1 1 0 1 1 0 1 0 0 0 0 1	0 1 0 1 0 1 0 0 1 1 1 1	
	СЧП -> 2	1 1 1 1 1 1 1 0 1 1 0 1 0 0 0	0 1 0 1 0 1 0 1 0 0 1 1	
5	СЧП -> 2	1 1 1 1 1 1 1 1 1 0 1 1 0 1 0	0 0 0 1 0 1 0 1 0 1 0 0	1
6	+A	0 0 0 0 0 1 1 1 0 1 1 0 0 1 1	+A	
	СЧП	0 0 0 0 0 1 1 1 0 0 0 1 1 0 1	0 0 0 1 0 1 0 1 0 1 0 0	
	СЧП -> 2	0 0 0 0 0 0 0 1 1 1 0 0 0 1 1	1 1 0 0 0 1 0 1 0 1 0 1	

$$C = 0,0E3_{16} \cdot 16^0 = 0.05542_{10}$$

0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$C_T = 0,0555$$

$$\Delta C = C_T - C = 0,0555 - 0,05542 = 0,00008$$

$$\delta C = |0.00008/0.0555| \cdot 100\% = 0.0014\%.$$

1. Перевод в формат Ф2

$$A = 3,7_{10} = 11.10110011001 = 0,111011001100 \cdot 2^2$$

0	1	0	0	0	0	0	1	0	1	1	0	1	1	0	0	1	1	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$B = 0,015_{10} = 0,03D70A_{16} = 0,0000001111010111 = 0,1111010111 \cdot 2^{-6}$$

0	0	1	1	1	1	0	1	0	1	1	1	0	1	0	1	1	1	0	0
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$$X_A = 1\ 0\ 0\ 0\ 0\ 0\ 1\ 0$$

$$X_B = 0\ 1\ 1\ 1\ 1\ 0\ 1\ 0$$

$$X_A + X_B = 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0$$

$$d = 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0$$

$$X_C = 0\ 1\ 1\ 1\ 1\ 1\ 0\ 0$$

$$P_C = -4$$

№	Операнды	СЧП (старшие разряды)	СЧП (младшие)	Признак коррекции
0	СЧП	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 1 0 1 0 1 1 1 0 0	0
1	-4A	1 0 0 0 0 0 1 0 0 1 1 0 1 0 0 0 0 0 0 0	-4A + 0A	1

	0A	00000000000000000000		
	СЧП	10000010011010000	111101011100	
	СЧП -> 4	11110000001001101	0000 1111 0101	
2	4A + A	00000100111111100	4A + A	0
	СЧП	11110101001001001	0000 11110101	
	СЧП -> 4	11111111010100100	10010000 1111	
3	0A – A	10000000100110100	0A – A	
	СЧП	01111111111011000	10010000 1111	
	СЧП -> 4	0000011111111101	100010010000	

$$C = 0,111111111011 \cdot 2^{-4} = 0,0000111111111011_2 = 0.06246_{10}$$

0	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

$$C_T = 0,0555$$

$$\Delta C = C_T - C = 0,0555 - 0,06246 = -0,00696$$

$$\delta C = |-0,00696/0.0555| \cdot 100\% = 0.12\%.$$