

A = 2.5
B = 0.015

1. Формат Ф1

$$\underline{A = (2.5)_{10} = (2,8)_{16} = (0,28)_{16} \cdot 16^1}$$

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

$$B = (0.015)_{10} = (0,03D70A)_{16} = (0,3D70A)_{16} \cdot 16^{-1}$$

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

$$\text{SignC} = \text{SignA} \oplus \text{SignB}.$$

$$X_A = P_A + d; X_B = P_B + d;$$

$$X_C = X_A + X_B - d;$$

$$P_C + d = \frac{P_A + d + P_B}{P_C} + d - d.$$

$$\begin{array}{r} X_A = 1000001 \\ X_B = 0111111 \\ \hline X_A + X_B = 1000000 \\ d = 1000000 \\ \hline X_C = 1000000 \end{array}$$

$$P_C = 0$$

№	Операнды	СЧП (старшие разряды)	В/СЧП (младшие разряды)	Признак коррекции			
0	СЧП	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			
1	[-M _A] _{доп}	1 1 1 1 1 0 1 1 0 0 0 0 0 0 0 0	-M _A				1
	СЧП	1 1 1 1 1 0 1 1 0 0 0 0 0 0 0 0	0 0 1 1 1 1 0 1 0 1 1 1				
	СЧП->2	1 1 1 1 1 1 1 0 1 1 0 0 0 0 0 0	0 0 0 0 1 1 1 1 0 1 0 1				
2	[2M _A] _{пр}	0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0	2M _A				0
	СЧП	0 0 0 0 1 0 0 0 1 1 0 0 0 0 0 0	0 0 0 0 1 1 1 1 0 1 0 1				
	СЧП->2	0 0 0 0 0 0 1 0 0 0 1 1 0 0 0 0	0 0 0 0 0 0 1 1 1 1 0 1				
3	[M _A] _{пр}	0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0	M _A				0
	СЧП	0 0 0 0 0 1 1 1 0 0 1 1 0 0 0 0	0 0 0 0 0 0 1 1 1 1 0 1				
	СЧП->2	0 0 0 0 0 0 0 1 1 1 0 0 1 1 0 0	0 0 0 0 0 0 0 0 1 1 1 1				
4	[-M _A] _{доп}	1 1 1 1 1 0 1 1 0 0 0 0 0 0 0 0	-M _A				1
	СЧП	1 1 1 1 1 1 0 0 1 1 0 0 1 1 0 0	0 0 0 0 0 0 0 0 1 1 1 1				
	СЧП->2	1 1 1 1 1 1 1 1 0 0 1 1 0 0 1 1	1 0 0 0 0 0 0 0 0 0 1 1				
5	0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-				1
	СЧП	1 1 1 1 1 1 1 1 0 0 1 1 0 0 1 1	1 0 0 0 0 0 0 0 0 0 0 1				
	СЧП->2	1 1 1 1 1 1 1 1 1 1 0 0 1 1 0 0	0 1 1 0 0 0 0 0 0 0 0 0				

6	[M _A] _{пр}	0000010100000000	M _A																0
	СЧП	0000010011001100	0110000000000000	000															
	СЧП->2	000000010011001	1001100000000000	000															
7	СЧП	000000010011001	1001100000000000	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	Мс	000000010011001	1001100000000000																

$$X_C = X_C - 1$$

$$C = (0,999)_{16} \cdot 16^{-1} = 0,03749084.$$

Определим абсолютную и относительную погрешности результата:

$$\Delta C = 0,0375 - 0,03749084 = 0,00000916$$

$$\delta C = \left| \frac{0,00000916}{0,0375} \right| \cdot 100\% = 0,2441406\%$$

2. Формат Ф2

$$A = (2,5)_{10} = (2,8)_{16} = (0,101)_2 \cdot 2^2$$

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

$$B = (0,015)_{10} = (0,03D70A)_{16} = (0,1111010111)_2 \cdot 2^{-6}$$

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

$$\begin{array}{r} X_A = + 10000010 \\ X_B = 01111010 \\ \hline X_A + X_B = 11111100 \\ d = - 10000000 \\ \hline X_C = 01111100 \end{array}$$

$$P_C = -4$$

№	Операнды	СЧП (старшие разряды)	В/СЧП (младшие разряды)	Признак коррекции
0	СЧП	0000000000000000	111101011100	1
	[-4M _A] _{доп}	1111011000000000		
	[0M _A] _{пр}	0000000000000000		
1	СЧП	1111011000000000	111101011100	0
	СЧП->4	1111111101100000	000011110101	
	[2M _A] _{пр}	0000101000000000		
	[4M _A] _{пр}	0001010000000000		
2	СЧП	0001111001100000	000011110101	1
	СЧП->4	0000000111100110	000000011111	
	[-M _A] _{доп}	1111101100000000		
	[0M _A] _{пр}	0000000000000000		

3	СЧП	11111110011100111000	000000000000	1111	0
	СЧП->4	11111111111100111001	100000000000	0000	
	[M _A] _{пр}	000001010000000000		M _A	
	СЧП	0000010011100111001	100000000000	0000	

$$C = (0,100110011001)_2 \cdot 2^{-4} = 0,03749084.$$

Определим абсолютную и относительную погрешности результата:

$$\Delta C = 0,0375 - 0,03749084 = 0,00000916$$

$$\delta C = \left| \frac{0,00000916}{0,0375} \right| \cdot 100\% = 0,02441406\%$$

Погрешности результатов вызваны неточным представлением операндов. В формате Ф1 и Ф2 операнды представлены одинаково точно.