



Allocations of Microwave Channels and Links (Point-to-Point)

Calculation Mechanism for using microwave links is divided into:

1. Dedicated Assignment
2. Per Link Assignment For BB
3. Per Link Assignment Inside Cities

1. If the allocation was dedicated, the equation below will be used:

The annual cost of Dedicated Assignment
=1200*0.55{(800(A+B)+300C).N.X}ID

Whereas:

- (A): the frequency package for the intended channel. Table 1 is used to calculate the factor.
- (B): the frequency bandwidth of the intended channel. Table 2 is used to calculate the factor.
- (C): represents the city where the frequency channel is required. Table 3 is used to calculate the factor.
- (N): the number of the frequency channels inside city within the same frequency package.
- (X): the entity to which the frequency is allocated. Table 5 is used to calculate the factor.

2. In case of Per Link Assignment For BB, the following equation will be used: **Total annual cost = 1200*0.65 {80(A+B).D.M.X} ID**

Whereas:

- (A): the frequency package in which the link will be allocated. Table 1 is used to calculate the factor.
- (B): the frequency bandwidth of the intended link. Table 2 is used to calculate the factor.
- (D): the polarization used for the microwave link. Table 4 will be used to calculate the factor.



- (M): number of microwave links used for the same frequency package and for one BB.
- (X): the entity to which the frequency is allocated. Table 5 is used to calculate the factor.

3. For Per Link Assignment Inside Cities, the following equation will be used:

$$\text{The annual cost for Per Link Assignment Inside Cities} = 1200 * 0.65 \{ (90(A+B) + 35C).D.M.X \} \text{ ID}$$

Whereas:

- (A): the frequency package in which the link will be allocated. Table 1 is used to calculate the factor.
- (B): the frequency bandwidth of the intended link. Table 2 is used to calculate the factor.
- (C): represents the city where the microwave link is required. Table 3 is used to calculate the factor.
- (D): the polarization used for the microwave link. Table 4 will be used to calculate the factor.
- (M): number of microwave links used for the same frequency package.
- (X): the entity to which the frequency is allocated. Table 5 is used to calculate the factor.

Below are the tables and way of calculation:

Table (1)

Factor (A)	Frequency package/ GHz	Calculation method
45	1.5,4,L6,U6,L7,U7,U8,M8	Factor calculation and numbers used are in accordance with the technical specifications of microwave link.
30	10	
25	11,13	
20	15,18,23	
15	26,28,38	



Table (2)

Factor (B)	Required bandwidth	Calculation method
8	3.5	The factor is calculated and numbers are chosen according to the bandwidth required in a way that makes the difference between the width and another is in the form of (width *2)
16	7	
24	14	
27.2	20	
32	28,29,29.65	
35.2	40	
40	56	
48	112	
48.8	140	

Table (3)

Factor (C)	Group	City	Calculation method
40	1	Baghdad	Numbers and figures are calculated according to Iraqi central organization for statistics and information technology (COSIT)
12.4	2	Nenava	
		Basra	
		Sulaimanya	
8.8	3	Babel	
		Thiqar	
		Diyala	
		Erbil	
		Anbar	
6	4	Saladin	
		Najaf	
		Wasit	
		Qadisiya	
4.2	5	Kirkuk	
		Karbala	
		Misan	
		Muthana	
		Duhok	



Table (4)

Factor (D)	Equal 1 when using the polarimeter unilateral
Calculation method	Equal 2 when using the dual-polarization (XPIC)
	The factor is calculated because the capacity of microwave doubles when using dual-polarization (XPIC)

Table (5)

Allocated Entity	Factor X-	Calculation method
Telecommunication services operators (governmental & private)	1	This factor is calculated and numbers are chosen for recognition whether users use microwave links for commercial or private purposes. Figures are variables
Security ministries	0.1	
Other ministries	0.5	