



The Hashemite Kingdom of Jordan

Telecommunications Regulatory Commission

Radio Spectrum Management Department

Spectrum Tariff Formulas and Schedules

1. Private and Public Land Mobile Radio Communication Services:

The fees for these services are calculated according to the following formula as follows:

Formula (1).

$F1 * F2 * F3 * (\text{bandwidth used} / 25\text{KHz}) * 8000$ = the tariff for private and public land mobile services in JD

Where F1, F2, F3 are defined in the following tables.

Area	Factor (F1)
Total Coverage for the kingdom	1
Amman	0.8
Rest of the cities	0.6

Table1 - Area Factor (F1)

Note: If Amman is covered by a radio network that is working within other area aside from the capital (Amman) the area factor in this case is Amman's Factor.

Transmitted Power (ERP)	Factor(F2)
≤ 5 watt	0.05
> 5 watt up to 15 watt	0.2
> 15 watt up to 25 watt	0.3
> 25 watt up to 50 watt	0.5
> 50 watt up to 100 watt	0.7
> 100 watt up to 150 watt	0.9
> 150 watt up to 250 watt	1
> 250 watt	1.2

Table2 - Transmitted Power (ERP) Factor (F2)

Power: is the effected radiated power (ERP) out of the antenna, knowing that the calculated power is the maximum power that can be radiated from the antenna.

Also the transmitted power that is used in calculation is the highest power used in the service (Network).

Frequency Range	Factor(F3)
Up to 470 MHz	1
From 470 Up to 960 MHz	0.8
From 960 Up to 3000 MHz	0.6
From 3000 Up to 18000 MHz	0.5
Greater than 18000 MHz	0.4

Table3 - Frequency Range Factor (F3)

Notes:

- If a single frequency is used in more than one area for radio network, the tariff charge will be calculated for the highest area factor plus 10% of that highest area in each other area that this frequency is used.
- Half of the amount calculated from the above mentioned formula will be deserved in case of using single frequency.
- The transmitted power that is used in calculation is the highest power that used in the service (Network).
- Area factor is 1.0 for public services regardless of the locations of transmitting stations.

2. Private and Public Fixed Land Radio Communications Services (Radio Communications Links):

2.1 Point to Point Fixed Land Radio Communications Service:

Frequency Bands	Channel with two directions¹ JD/Year
Up to 3000 MHz	$150+(0.04*B^{(2)})$
Greater than 3 Up to 11 GHz	$100+(0.03*B)$
Greater than 11 Up to 20 GHz	$50+(0.025*B)$
Greater than 20 Up to 30 GHz	$10+(0.015*B)$
Greater than 30 Up to 70 GHz	$(0.008*B)$
Greater than 70 Up to 95 GHz	$(0.0012*B)^{(4)}$
<ol style="list-style-type: none">1. Channels with one direction that only transmit charges 75% of the tariff required by channels with two directions (Transmit and Receive).2. The Letter (B) is used to indicate frequency bandwidth in kilohertz.3. If one direction bandwidth is greater than the opposite direction in the channel with two directions, then the tariff will be calculated given the greater bandwidth, as a link with two directions (transmit and receive).4. If the used bandwidth is less than 250 MHz, then 250 MHz bandwidth is considered in tariff calculation.	

Table4 - Point to Point Fixed Land Radio Communications Service

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

2.2 Public Point to Multi Point fixed land radio communication service:

Public Point to Multi Point fixed land radio communication service for the service provider (Point to Multi Point SERVICE PROVIDER) is calculated in the same way as in land mobile service as in formula (2) below using the above tables No.s 2 and 3:

Formula (2)

$F2 * F3 * (\text{Total bandwidth used} / \text{RF channel}) * 8000 = \text{the tariff for the public land radio communication service Point to Multi Point fixed land radio communication in JD}^1$

Notes:

- Private point to multi point fixed radio communications service is calculated as in point to point fixed radio communications service as in table (4).
- Telemetry service is calculated as in fixed land radio communications service as in table (4).
- Service Provider: is the operator of PMP Service.

3. Fixed Broadband Wireless Access (FBWA) Service:

The fees for these services are calculated according to the following formula as follows:

Formula (3).

$\text{Bandwidth used} * F1 * F3 * 44800 = \text{the tariff for Fixed Broadband Wireless Access in JD}$

Where F1, F3 are defined in the following tables.

Area	Factor (F1)
Total Coverage for the kingdom	1
Amman Governate Only	0.5
All Governates except Amman Governate	0.5

Table5 - Area Factor (F1)

Frequency Range	Factor(F3)
Less than 3 GHz	0.8
3-4 GHz	0.6
4-6 GHz	0.4

Table6 - Frequency Range Factor (F3)

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

¹ Per radio site/radio station or cell.

4. Aeronautical Radio Navigation Services:

4.1 Aeronautical Radio Navigation Services (Except Airplane License):

As the following table, table No. 7.

Aeronautical Frequency Operations (per Each Station per each Channel)	Amount (JD/year)
Control Tower Equipment, Equipments used in landing and take off Systems ...etc	140
Assistant Navigational equipment like Radar....	40

Table7 - Aeronautical Radio Navigation Services (Except Airplane License)

4.2 Airplane License:

As the following table, table No. 8.

Airplane and Weight	Amount (JD)
Airplane with a take off weight greater than 14000 Kg	550
Airplane with a take off weight greater than 3200 and less than or equal to 14000 Kg	250
Airplane with a take off weight less than or equal to 3200 Kg	30

Table8- Airplane License

4.3 Land Service in the Aeronautical Radio Navigation: is calculated as the rest of the radio communication services with same principles and conditions.

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

5. Maritime Radio Navigation services:

5.1 Ship or Boat License

As the following table, table No. 9.

Ship	Amount(JD/Year)
Ship	250
Boat	50

Note: the tariff is paid regardless of brands, equipment quantity or the size of the ship or the boat

Table9 - Ship and Boat License

5.2 Maritime Radio Navigation License:

As the following table, table No.10.

Station/ equipment	Amount(JD/ year/ station or device)
Coastal station/ station/ channel ⁽¹⁾	140
Equipment used in assisting radio navigation like radar	40

(1) coastal station: which is a fixed station that communicates with vessels and boats and can communicate with airplanes and terrestrial mobile radio communications and operates in the Radio navigation frequencies

Table10 - Maritime Radio Navigation Stations Licenses

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

6. Earth Station Services:

6.1 Fixed Earth Radio Communications Stations

As the following table, table No. 11.

Stations and Bandwidth	Amount(JD/year)
Station with a bandwidth less than 100KHz	$300+0.5(B)+200$ /additional satellite
Station with a bandwidth greater than 100KHz and up to 1000KHz	$2500+0.4(B)+500$ /additional satellite
Station with a bandwidth greater than 1000KHz and up to 2000KHz	$5000+0.3(B)+1000$ / additional satellite
Station with a bandwidth greater than 2000KHz	$8000+0.2(B)+2000$ /additional satellite

Letter (B) indicates the bandwidth in kHz

Table11 - Fixed Earth Radio communications Stations

6.2 VSAT Stations

As the following table, table No. 12.

VSAT Station	Amount(JD/year)
Small earth Station VSAT type up to 20 Stations	1500JD for the first station +750JD for every additional station
Small earth station VSAT type from 21 up to 50 stations	500JD for each additional station
Small earth station VSAT type from 51 up to 100	250 JD for each additional station
Small earth station VSAT type from 101 and above	200JD for each additional station

Table12 - VSAT Stations

Notes:

- Earth stations for receive only purpose charges 50% of the above mentioned amount (of the two directions earth stations).
- VSAT HUB Stations are considered fixed stations and the tariff charge will be the same tariff charge that claimed from fixed stations as in table No. 11.
- The tariff charge for temporary and individual Inmarsat licenses are treated the same as VSAT stations as in table (12).
- If one direction bandwidth is greater than the opposite direction in the earth station with two directions, then the tariff will be calculated given the greater bandwidth, as a station with two directions (Up link and Down Link).

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

6.3 Mobile Earth Station Licenses:

The fees for this service is 4000JD/year

7. **Ancillary Broadcasting Services:** is calculated the same as in Fixed Land Radio communications Services as in table (4) and multiply by 2 (*2).

8. Amateur Radio Station License:

As the following table, table No. 13.

Service Type	JD/Year
Association of amateur radio license	15
Amateur radio licenses	1JD/amateur

Table13 - Amateur Radio Station

9. Radio Determination services:

As the following table, table No. 14.

Service Type	JD/Year
Terrestrial Radio Determination	100JD for each station /channel
Emergency Transmitting Equipment	50JD for each station(device)
Space Radio Determination such as Differential Global Positioning System (DGPS) or radio direction finding through one or group of satellites	200JD/station/channel

Table14 - Radio Determination services

10. Radio Astronomy Service:

As the following table, table No. 15.

Service Type	JD/year
Radio Astronomy communication services	200JD/Station

Table15 - Radio Astronomy Services

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

11. Radio Communication License for Experiment and Research
As the following table, table No. 16.

Service Type	JD/year
Radio Communication license for Experiments and researches	25% of a permanent licensing if demanded and according to service type.

Table16 - Radio Communication License for Experiment and Research

Conditions:

For the purposes of this tariff the experiments and researches are as in the following cases:

- These radio communications stations to be used by universities or institutes for researches and are entered to Jordan on permanent or temporary bases.
- Incase these radio stations used by other entities aside from the universities or institutes then they should be entered on temporary bases for the purpose of experiments or researches.

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

12. Mobile Personal Communications Services by satellite such as GMPCS.
As the following table, table No. 17.

Service Type	JD/year
mobile personal communications services by satellite	150JD/100KHz or part of it either in the up link or the down link bands

Table17 - Mobile Personal Communications Services by satellite

Notes:

In case of frequencies sharing in the Mobile Personal Communications Services by satellite (either in the uplink or the down link) between more than one operator then the above mentioned amount are divided between the operators, maximum three operators, (for example if the service is shared between three operators each one will pay 1/3rd of the total amount).

General Note: 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

13. TV and Radio Broadcasting Services

The Spectrum tariff on these services is calculated by the following formula:

Tariff for TV and FM broadcasting services = $m_1 * m_2 * m_3 * m_4 * 64,000$ JD.

Where

- M1 is the coefficient of the Coverage for Commercial broadcast and the Population coefficient for non Commercial broadcast (Public).
- M2 is the Effective Radiated Power Coefficient (ERP) in Kilowatt and it is defined as the maximum possible effective radiated power that can be transmitted from the antenna.
- M3 is the coefficient of the Frequency band.
- M4 is the coefficient of the Service type.

The following tables define the values for the four coefficients as follow:

TV and Radio Broadcast for Non Commercial (Public Broadcast)							
Population Coefficient (M1)		Effective Radiated Power Coefficient in Kilowatt (M2)		Frequency Band Coefficient (M3)		Service Type Coefficient (M4)	
Jordan	1.2	less than or equal 1	0.1	VHF Band I	1	TV	1
Amman	1	Greater than 1 and less than or equal 2	0.2	VHF Band III	2	Sound	0.5
Irbid	0.6	Greater than 2 and less than or equal 5	0.3	VHF FM	1.2		
Zarqa	0.6	Greater than 5 and less than or equal 10	0.4	UHF Band IV	1.2		
Balqa	0.25	Greater than 10 and less than or equal 20	0.5	UHF Band V	1		
Mafrq	0.2	Greater than 20 and less than or equal 50	0.6	MF AM	0.2		
Jerash	0.2	Greater than 50 and less than or equal 100	0.7				
Karak	0.2	Greater than 100 and less than or equal 200	0.8				
Ajloun	0.15	Greater than 200 and less than or equal 500	0.9				
Madaba	0.15	Greater than 500 and less than or equal 1000	1				
Maan	0.15	Greater than 1000	1.2				
Tafleh	0.15						
Aqaba	0.15						

Table no. (1) States the values for the non Commercial (Public) Broadcast tariff formula

TV and Radio for Commercial Broadcast							
Coverage Area ² (M1)		Effective Radiated Power (ERP) Coefficient in Kilowatt (M2)		Frequency Band Coefficient (M3)		Service Type Coefficient (M4)	
Jordan	1.2	Less than or equal 1	0.1	VHF Band I	4	TV	1
Amman	1	Greater than 1 and less than or equal 2	0.2	VHF Band III	2	Sound	0.5
Other Cities	0.8	Greater than 2 and less than or equal 5	0.3	VHF FM	1.2		
		Greater than 5 and less than or equal 10	0.4	UHF Band IV	1.2		
		Greater than 10 and less than or equal 20	0.5	UHF Band V	1		
		Greater than 20 and less than or equal 50	0.6	MF AM	0.2		
		Greater than 50 and less than or equal 100	0.7				
		Greater than 100 and less than or equal 200	0.8				
		Greater than 200 and less than or equal 500	0.9				
		Greater than 500 and less than or equal 1000	1				
		Greater than 1000	1.2				

Table no. (2) States the values for the Commercial Broadcast tariff formula

Note:

1. The Non Commercial (Public) Broadcast is defined as TV and Radio broadcast services, the objective of which is to publicize the information policy of the Government through broadcasting variety of programs concerning spreading national education among the citizens without being generating profit as its main objective.

2. if the frequency is used in more than one area (even partially³) for a single license, the tariff for this license will be calculated by adding the highest tariff in one of all the areas that this frequency is being reused to 10% of the tariff due on the other areas individually, for simplification, if a single frequency is used in more than one location, the tariff due

² Areas are the 12 governorates as of the administrative geographical boundaries.

³Partially means, if this frequency is originally used to cover certain area and it is spilled to cover other area(s) the formula for frequency reuse will be used.(for example, if a frequency is used to cover Amman and it happened that part of Zarqa or whole Zarqa is covered by this frequency, and the level of the signal from the station from Amman that is received in Zarqa exceeds the protection levels as of the ITU-recommendation BT.655-3(07/94) for the TV broadcasting and exceeds the protection levels as of table 2.1 of ITU Geneva 84 the frequency reuse formula will be used) based on the broadcasting tariff procedures.

on will be calculated $(0.9+0.1 \times \text{number of the location that this frequency is being reused.}) \times \text{the highest tariff for this frequency among all locations.}$

3. 100JD permission fees are added on yearly bases to each license for the services mentioned above, 100JD additional first time application fees and 50 JD for license modification or renewal.

Examples:

- Example on calculating TV and Radio Broadcasting tariff:

A company is using the frequency 92 MHz for its FM broadcasting in Greater Amman with maximum effective radiated power of 3 Kw.

By using the formula, the tariff due on the company is $m1 \times m2 \times m3 \times m4 \times 64,000 = 1 \times 0.3 \times 1.2 \times 0.5 \times 64,000 = 11,520 \text{ JD}$

- Another example on frequency reuse in more than one location.

The frequency 184.5 MHz is being reused by a Public Broadcasting corporation in Ras Al Naqab and Al Rweished cities where this frequency was originally used in Suweileh city (Amman). The tariff incurred on the corporation by using the frequency reused formula was reduced by 6,000 JD less than if the tariff is calculated for each location individually, as show in table (3) below:

location	Frequency in MHz	Population	Effective radiated power in watt	tariff calculated without applying the frequency reuse formula	Tariff calculated by applying the frequency reuse formula
Suweileh	184.5	Amman	500,000	103,680,00	103,680,00
RAs Naqab	184.5	Aqaba	20,000	2,880,00	288,00
Rweished	184.5	Mafraq	3,000	4,147,20	414,72
total				110,707,20	104,382,72

Table No. (3) Illustrates the reduction of tariff in case the frequency reuse formula is applied

Definitions (1)

Radio frequency: electromagnetic waves of frequency less than 3000GHz that are transmitted in space without the need for guiding media.

Telecommunications: the conveyance, transmission, reception, radiation of signals, voice, video or data utilizing wire, radio, optical, electromagnetic medium or any other telecommunication means.

Radiocommunication service: a service which involve the transmission, emission and/or reception of radio waves for specific telecommunication purposes.

Fixed service: a radiocommunication service between specified fixed points.

Mobile service: a radiocommunication service between mobile and land stations, or between mobile stations.

Land mobile services: a mobile service between base stations and land mobile stations, or between land mobile stations.

Maritime mobile service: a mobile service between coast stations and ship stations or between ship stations, or between associated on –board communication stations.

Aeronautical mobile service: a mobile service between aeronautical stations and aircraft stations, or between aircraft stations.

Radiodetermination service: a radiocommunication service for the purpose of radiodetermination.

Radionavigation service: A radiodetermination service for the purpose of radionavigation.

Radiolocation service: a radiodetermination service for the purpose of radiolocation.

Radio astronomy service: a service involving the use of radio astronomy.

Radio stations and systems

Station: one or more transmitters or receivers or a combination of transmitter and receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service.

Fixed station: a station in the fixed service

Mobile station: a station in the mobile service intended to be used while in motion or during halts at unspecified points.

Experimental station: a station utilizing radio waves in experiments.

Radio astronomy station: a station in the radio astronomy service.

Radiodetermination station: a station in the radiodetermination service.

(1) The definitions are based on the Jordan Telecomm. Law and ITU-R Radio Regulations.

Coast station: a land station in the maritime mobile service.

Ship station: a mobile station in the maritime mobile service located on board a vessel.

Land mobile earth station: a mobile earth station in the land-mobile –satellite service capable of surface movement within the geographical limits of a country or continent.

Base earth station: an earth station in the fixed-satellite service or, in some cases, in the land mobile-satellite service, located at a specified fixed point or within a specified area on land to provide a feeder link for the land mobile-satellite service.

Effective radiated power (e.r.p.) (in a given direction): The product of the power supplied to the antenna and its *gain relative to a half-wave dipole* in a given direction.

Gain of an antenna: The ratio, usually expressed in decibels, of the power required at the input of a loss free reference antenna to the power supplied to the input of the given antenna to produce, in a given direction, the same field strength or the same power flux-density at the same distance. When not specified otherwise, the gain refers to the direction of maximum *radiation*. The gain may be considered for a specified polarization.

RF channel: the band used for transmission or reception to form full communication in one direction using transmitter in the Radio service.

Band: the frequency spectrum between two defined limits.

Occupied bandwidth: the width of a frequency band such that, below the lower and above the upper frequency limits, the mean power emitted are each equal to a specified percentage B/2 of the total mean power of a given emission.

VSAT: Very Small Aperture Terminal, an earthbound station used in satellite communications of data, voice and video signals, excluding broadcast television that serves home and business users. A VSAT consists of two parts, a transceiver that is placed outdoors in direct line of sight to the satellite and a device that is placed indoors to interface the transceiver with the end user's communications device, such as a PC. The transceiver receives or sends a signal to a satellite transponder in the sky.

The VSAT is described with the following features:

- 1- VSATs are implemented to form closed networks for dedicated applications.
- 2- VSATs (remote) are directly installed on the users' premises.
- 3- VSAT are part of network which has "STAR" topology, consists of relatively large central station, called HUB station and many VSAT (remote) earth stations, however some VSAT networks operate in Point-to-Point- or " MESH" configuration, without HUB.
- 4- VSATs usually employ digital transmission with a low or medium bit rate (≤ 2 Mbit/s), and
- 5- VSATs (remote) are equipped with small antenna; the antenna diameters are limited to **2.4 m**, however in some very special cases in the MESH configuration up to 3 m may be required, in this case the station may be categorized under the definition of permanent earth station, depending on the TRC's decision; however in any case it is the TRC who decide weather to consider it as VSAT or other types of earth stations.

VSATs and related technology divided into the following areas:

- Single carrier per channel (SCPC): These kinds of systems are characterized by a continuously transmitted carrier signal (exclusive frequency assignment).
- The VSAT "STAR" Network: this VSAT type depends on the operation of the Master Earth Station (Hub) for data retransmission. Individual VSATs cannot receive direct transmissions from each other, but communicate exclusively with the Master Earth Station (Hub), generally using transmissions "by burst" and

contention protocols to minimize the necessary band width. The diameter of the VSAT geostationary antenna varies from 1.2m to 2.4m and can operate both in the C-band (4-6 GHz) and in the Ku-band (12-14 GHz). Each end user is interconnected with the hub station via the satellite, forming a star topology (network). The HUB controls the entire operation of the network. For one end user to communicate with another, each transmission has to first go to the hub station that then retransmits it via the satellite to the other end user's VSAT.

- The VSAT “MESH” Network: in this type, VSAT sharing the same group of channels and which can directly receive transmissions among them. Due to higher power requirements, larger diameter parabolic antennas (3m) may be used, in very special cases. This type of VSAT is generally limited to voice and batch type operations.
- VSATs of less than 1m (USAT): this VSAT technology uses smaller antennas (less than 1m in diameter) and highly integrated technology to access to the VSAT network. USATs operate in star networks and require a Master Earth Station (Hub). Wide spectrum techniques are generally used even within the Ku-band to reduce possible interference.

Radiofrequency characteristics

VSATs operating on Ku-band transmit at 12-14 GHz, generally with narrow spectrum transmission channels and BPSK or QPSK modulation. Sometimes wide spectrum techniques are used in order to reduce the diameter of the antenna.

- VSATs of less than a meter (USATs) use the Ku-band.
- VSATs operating in the C-Band transmit at 4-6 GHz and use widened spectrum techniques to reduce the power required by the transmitter.
- The diameters of antennas operating on C-band are larger than those used for Ku-band.

Transmission power

Transmission power: 1-10 watts.

- The following definitions are also relevant:
 - VSAT system: a VSAT (satellite communication) system is composed of the hardware and the software that makes up a functioning entity and includes the space segment, the earth segment and supporting equipment elements. The earth segment comprises the VSAT remote earth station and the central earth station “HUB” , if any.
 - VSAT network: a VSAT network is the entire functioning configuration that provides (a) specific service(s) to end users and includes the VSAT system and interfaces with other interrelated entities in order to accomplish the objectives of the service(s).

Public telecommunications Network: telecommunications system or a set of telecommunications systems providing telecommunication services to beneficiaries pursuant to the provisions of this Law.

Private telecommunications Network: the telecommunications system operated by a single person or a single group of persons to serve their own needs.

Permit: the permit granted to a person to establish or operate a private telecommunications network pursuant to the provisions of this Law.

The Law: Jordan’s Telecomm. Law No. 13 of 1995 and its amendments.

[In case of contradiction Arabic version prevails.](#)