



## **Fixed Broadband Wireless Access (FBWA)**

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**TELECOMMUNICATIONS  
REGULATORY COMMISSION**

**Statement on  
Radio Spectrum Assignment  
Competitive Process  
For**

**Fixed Broadband Wireless Access  
(FBWA)**

**1. Introduction**

1.1 The radio frequency spectrum is a national asset that contributes to the welfare of every citizen in the Kingdom. From a technical perspective, the lower frequency ranges of the spectrum exhibit more friendly propagation characteristics with respect to the optimization of network construction. As a result the lower frequency ranges have always been attractive to all classes of investors and users including many government agencies. It is typically the most congested range and in many cases suffers from inefficient use. Consequently, it is viewed as the most precious part of the frequency spectrum.

The new licensing regime adopted by the TRC provides equal rights to any new entrant to apply for a license to use scarce resources,



**Fixed Broadband Wireless Access  
(FBWA)**

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including radio frequency spectrum.

The difficulty that faces the TRC is that the expressed immediate demand in a specific band of frequencies exceeds the spectrum resources that can be made freely available in that band.

Furthermore demand is growing rapidly, thereby causing more difficulties as to how to ensure equality of treatment for all prospective licensees.

In the mean time, the shortage in availability of radio spectrum has severely hindered investment in telecommunication infrastructures and caused delays in the materialization of effective competition within the fixed networks and services. The TRC believes that this shortage will persist and may even escalate as a result of the developments in broadband technology.

1.2 In order to establish a fair mechanism for the allocation, assignment and pricing of scarce resources in general, the TRC conducted a public consultation entitled " Scarce Resources Allocation and Pricing " in December 2005. The contributions and comments that were made in response to the said consultation have been taken into consideration in articulating this statement.

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1.3 In recognition of the substantial contribution of the radio frequency spectrum to the national economy and its development, and the shortage of freely available spectrum for Fixed Wireless Services, H.M. the King extended his support to the public telecom service market by instructing all the government related users of the radio spectrum to do their best efforts to improve the efficiency of its use and to eventually clear, evacuate and make available the maximum possible amounts of spectrum for civil use

1.4 His Majesty's support was translated into concerted efforts that were followed-up by the Prime Minister and made by the Minister of ICT, the Joint Chief of Staff of the armed forces, and the Director of Command, Control and Telecommunications , in close coordination with the TRC. These efforts have achieved some success by making available reasonable amounts of spectrum. In TRC's view this is just the first step towards fully developing the national table and register of the radio frequency spectrum which will eventually enable TRC to plan for optimal utilization of the spectrum and to meet the exploding demand for the spectrum hungry broadband services.

1.5 The following table represents the frequency bands that have become available for Fixed Broadband Wireless Access (FBWA).

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Frequency Range(GHz)	Available Frequency Spectrum BW (MHz)	Allocated Frequency Spectrum Blocks	Tx/Rx Separation
3.4-3.6	60+60, Inside Amman Governorate	3440-3500MHz\3540-3600MHz	100 MHz
	30+30, Outside Amman Governorate	3440-3470MHz\3540-3570MHz	100 MHz
3.6-3.8	60+60, Inside Amman Governorate	3640-3700MHz\3740-3800MHz	100 MHz
	30+30, Outside Amman Governorate	3640-3670MHz\3740-3770MHz	100 MHz
5.2-5.35	50 MHz, All Jordan	5300-5350 MHz	N/A
5.4-5.7	20 MHz, All Jordan 22 MHz All Jordan	5450-5470 MHz 5600-5622 MHz	N/A

The TRC expects that even if these bands were to be sufficient to meet the immediate expressed demand, fair opportunity for new comers to access will be maintained. This implies that rationing measures are necessary in order to meet existing and future needs. The TRC has, therefore, decided to adopt a competitive assignment process for the award of frequency licenses for the provision of FBWA services.

**Note:**

The TRC would like to indicate that frequencies in the 2.5 GHz range may also be made available for use in the provision of Broadband Wireless Access (BWA) services. However, such use will be subject to the ongoing international activities for the use of this range in the provision of **Mobile** Broadband Wireless Access (MBWA) services. The TRC will make an announcement in this regard in due course.

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**2. Technology Considerations**

2.1 In order to ensure the efficient utilization of the radio frequency spectrum, as well as reinforcing TRC's previously stated intention to remain technologically neutral, Individual License holders who acquire a spectrum license to provide FBWA services will be free to choose the technology they intend to employ (WiMax or otherwise). However, and in accordance with the stipulation of article 1.3 of Schedule I of the Individual License Agreement and the relevant references in the non-class licenses, the licensees will not be allowed to employ the used technology for providing any form of "Public Mobile Wireless Services" as defined in Schedule A of the Individual License. For clarity, Nomadicity and Portability within the coverage of the same radio base station without seamless hand over between adjacent radio stations is not considered equal to mobility.

2.2 The applicants for radio spectrum may use either paired or non-paired blocks of frequency spectrum (i.e. FDD or TDD). However, the TRC would like to point out the more favorable

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(A)

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FDD )

.(TDD

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<p>spectral efficiency that is inherent in the TDD techniques.</p> <p>2.3 The licensees may use the technology of their choice, or change the technology currently in use to a more efficient technology, provided that the radio transmission parameters and power envelopes (output power and antenna radiation patterns) of radio stations are well coordinated through TRC to avoid interference between national licensees or with operators in neighboring countries, and provided that compliance with the requirements of section 17 of Schedule B of the Individual License in relation to mobile services is assured.</p> <p>2.4 Licensed operators will not be prohibited or forced by TRC to restrict the types of services (voice, data, and/or video) that they would like to provide to their customers, subject always to adherence to the license requirements regarding compliance with applicable laws.</p>	<p style="text-align: right;">3/2</p> <p>) (</p> <p>(B) (17)</p> <p style="text-align: right;">4/2</p> <p>) (</p>
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**3. The Assignment Possibilities**

The current status regarding the possible assignments in available radio frequency spectrum for the purpose of its utilization in the provision of FBWA services in Jordan is as shown in the following paragraphs, noting that it is not the intention of TRC that any back-hauling be made in any of the available bands. However, if any licensee does use some of the frequencies assigned for (FBWA) services in performing backhauling between radio stations within the same assigned band, this will be the choice of the licensee, and will not be accepted as an excuse for a demand by the licensee for extra spectrum in the same band or in any other band to cover shortage in frequencies for access purposes.

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(Backhauling)

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(3.5GHz) 1/3

**3.1 The 3.5 GHz Band**

In order to facilitate the assignments in this band and to cope with the imbalance between the availability inside and outside Amman Governorate , the available parts have been divided into units of 3.5 MHz width.

Assignments will be made on the basis of 28 MHz lots composed of eight units of 3.5 MHz as shown in Fig.1.

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28

3,5

(1)

**Fig1: 3.5 GHz band Allocation.**

Block 1 Inside & Outside Amman Gov.	A1 3.5 MHz	A2 3.5 MHz	A3 3.5 MHz	A4 3.5 MHz	B1 3.5 MHz	B2 3.5 MHz	B3 3.5 MHz	B4 3.5 MHz	
	3440.25	3443.75	3447.25	3450.75	3454.25	3457.75	3461.25	3464.75	3468.25
Block 2 Inside Amman Gov. Only	C1 3.5 MHz	C2 3.5 MHz	C3 3.5 MHz	C4 3.5 MHz	D1 3.5 MHz	D2 3.5 MHz	D3 3.5 MHz	D4 3.5 MHz	
	3470.00	3473.50	3477.00	3480.50	3484.00	3487.50	3491.00	3494.50	3498.00
Block 3 Inside & Outside Amman Gov.	A1' 3.5 MHz	A2' 3.5 MHz	A3' 3.5 MHz	A4' 3.5 MHz	B1' 3.5 MHz	B2' 3.5 MHz	B3' 3.5 MHz	B4' 3.5 MHz	
	3540.25	3543.75	3547.25	3550.75	3554.25	3557.75	3561.25	3564.75	3568.25
Block 4 Inside Amman Gov. Only	C1' 3.5 MHz	C2' 3.5 MHz	C3' 3.5 MHz	C4' 3.5 MHz	D1' 3.5 MHz	D2' 3.5 MHz	D3' 3.5 MHz	D4' 3.5 MHz	
	3570.00	3573.50	3577.00	3580.50	3584.00	3587.50	3591.00	3594.50	3598.00

The first assignment in this band will be constituted from units A1, A2, C1, C2, and units A1', A2', C1', C2' (the first two columns in Fig.1).

The next assignment will be constituted from the units in the third & fourth columns; and so on .

This will enable a total of four assignable lots, each composed of 2x14 MHz inside Amman Governorate and 2x7 MHz outside it.

( A1 , A2 ,C1 , C2)  
 . (A1' , A2' , C1' , C2')  
 . (1)

14x2  
 7x2

### 3.2 The 3.6 GHz Band

In order to facilitate the assignments in this band and to cope with the imbalance between the availability inside and outside Amman Governorate , the available parts have been divided into units of 3.5 MHz width. Assignments will be made on the basis of 28 MHz lots composed of eight units of 3.5 MHz as shown in Fig.2.

3,5  
28  
3,5  
. (2)

**Fig2: 3.6 GHz band Allocation.**

Block 1 Inside & Outside Amman Gov.	A1 3.5 MHz	A2 3.5 MHz	A3 3.5 MHz	A4 3.5 MHz	B1 3.5 MHz	B2 3.5 MHz	B3 3.5 MHz	B4 3.5 MHz	
	3640.25	3643.75	3647.25	3650.75	3654.25	3657.75	3661.25	3664.75	3668.25
Block 2 Inside Amman Gov. Only	C1 3.5 MHz	C2 3.5 MHz	C3 3.5 MHz	C4 3.5 MHz	D1 3.5 MHz	D2 3.5 MHz	D3 3.5 MHz	D4 3.5 MHz	
	3670.00	3673.50	3677.00	3680.50	3684.00	3687.50	3691.00	3694.50	3698.00
Block 3 Inside & Outside Amman Gov.	A1' 3.5 MHz	A2' 3.5 MHz	A3' 3.5 MHz	A4' 3.5 MHz	B1' 3.5 MHz	B2' 3.5 MHz	B3' 3.5 MHz	B4' 3.5 MHz	
	3740.25	3743.75	3747.25	3750.75	3754.25	3757.75	3761.25	3764.75	3768.25
Block 4 Inside Amman Gov. Only	C1' 3.5 MHz	C2' 3.5 MHz	C3' 3.5 MHz	C4' 3.5 MHz	D1' 3.5 MHz	D2' 3.5 MHz	D3' 3.5 MHz	D4' 3.5 MHz	
	3770.00	3773.50	3777.00	3780.50	3784.00	3787.50	3791.00	3794.50	3798.00

The first assignment will be constituted from units A1, A2, C1, C2, and units A1', A2', C1', C2' (the first two columns in Fig.2).

( A1 , A2 ,C1 , C2)  
 (A1' , A2' , C1' , C2')  
 . (2)

The next assignment will be constituted from the units in the third & fourth columns, and so on.

This will enable four assignable lots, each using 2x14 MHz inside Amman Governorate and 2x7 MHz outside it

14x2  
 7x2

### 3.3 The 5 GHz band

(5GHz) 3/3

In order to facilitate the assignments in this band, the available parts have been divided into units of 5 MHz width.

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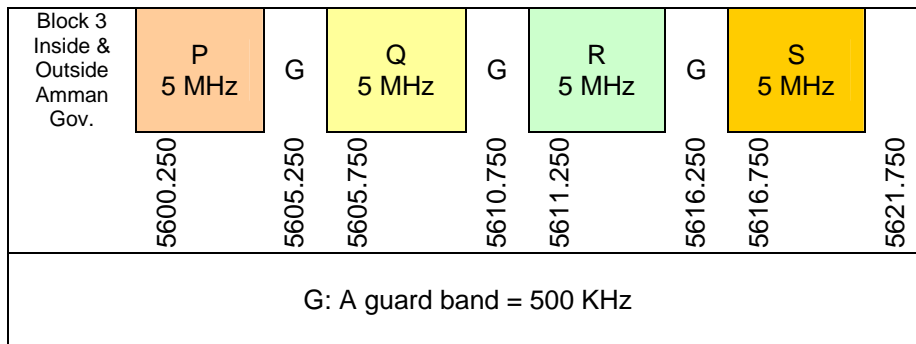
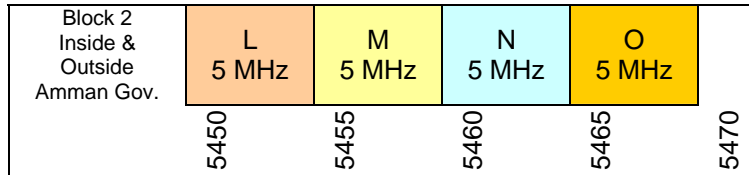
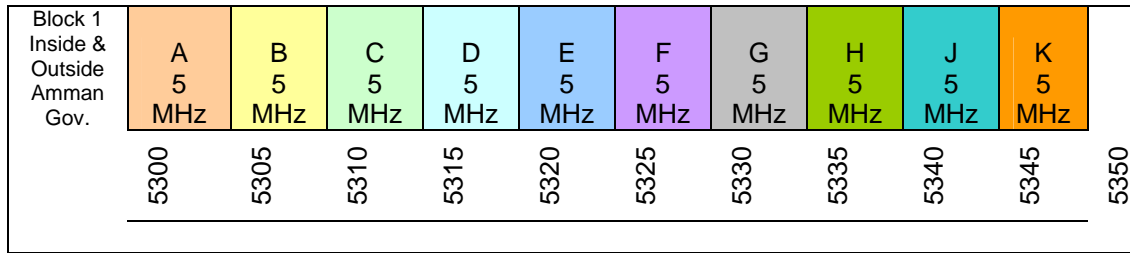
Assignments will be made on the basis of 20 MHz lots in units of 5 MHz as shown in Fig.3.

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**Fig3: 5 GHz band Allocation.**



The first assignment will be constituted from units A, B, C & D. The next assignment will be units E, F, G & H, and so on. This will enable at least four assignable lots, each using 20 MHz inside and outside Amman Governorate.

(A,B,C,D)  
(E,F,G,H)

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**4. The Tenders**

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4.1 There will be several tenders for the assignment and licensing of the available frequency lots :

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a) The first tender : will be open for participation by all individual licensees and non-class licensees whose licenses permit them to build FBWA networks and to provide the related services, as well as the existing applicants for individual licenses who are qualified by TRC . Through this tender, there will be a license for one lot only in the band 3.5 GHz with a bandwidth of (14x2) MHz within Amman Governorate, and a bandwidth of (7x2) MHz outside it.

(FBWA)

There will also be a license for one lot only in the band 3.6 GHz with a bandwidth of (14x2) MHz within Amman Governorate, and a bandwidth of (7x2) MHz outside it, as well as a license for one lot only in the band 5.4 GHz with a bandwidth of (20) MHz within Amman Governorate and outside it.

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(2x14)  
(2x7)  
(2x14) 3.6  
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b) The subsequent tenders : will take place at least six months after the declaration of the results of the first tender, The TRC will announce these tenders and their conditions for the assignment and licensing of more frequencies in due course. Participation or non participation in these tenders by winners of the first tender, and other related details will

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<p>be subject to a statement by TRC to be issued after studying the situation that results from the first tender.</p>	
<p>4.2 At the start of the first tender, the TRC will declare a lot of frequencies in each of the available bands as open for competition, and the Annual Returns (frequency fees) for the declared lot in each band will be specified.</p>	<p style="text-align: right;">2/4</p> <p style="text-align: center;">( )</p>
<p>4.3 Applications for competition will be invited on the basis that each competitor has the freedom to make an offer for the acquisition of the declared lot in each of the available bands.</p>	<p style="text-align: right;">3/4</p>
<p>4.4 The competitive element will be the amount (in JD) that the competitor is willing to pay for the acquisition of the license to utilise the declared lot for a nominal period of fifteen years (Acquisition Fee). The actual amount that the winner has to pay will be calculated I proportion to the remaining period of the individual license or the non-class license as applicable for a maximum of fifteen years.</p>	<p style="text-align: right;">4/4</p> <p style="text-align: center;">( )</p> <p style="text-align: center;">.( )</p>
<p>4.5 The validity of the frequency license issued pursuant to this process will expire at the same expiry date of the individual or non-class license or the period of fifteen years, as applicable. Its renewal will be subject to conditions to be set by the TRC in due course.</p>	<p style="text-align: right;">5/4</p>



<p>4.6 Additionally, the winner has to pay the Annual Returns (frequency fees) as outlined in article (5) of this document for the lots(s) that were won, this being a constant amount determined by TRC to be paid annually and is not subject to the competition.</p>	<p style="text-align: right;">6/4</p> <p style="text-align: center;">(                    )</p> <p style="text-align: right;">(5)</p>															
<p>4.7 The minimum acceptable amount of the Acquisition Fee for each of the indicated lots in the various bands will be as follows:</p> <ul style="list-style-type: none"> <li>– In the 3.5 GHz band (5 Million JD).</li> <li>– In the 3.6 GHz band (5 Million JD).</li> <li>– In the 5.0 GHz band (3 Million JD).</li> </ul> <p>Noting that there will not be any evacuation fee.</p>	<p style="text-align: right;">7/4</p> <p style="text-align: center;">:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">.(                    5 )</td> <td style="width: 10%; text-align: center;">.</td> <td style="width: 20%;">3,5</td> <td style="width: 10%; text-align: center;">-</td> <td style="width: 5%;"></td> </tr> <tr> <td>.(                    5 )</td> <td style="text-align: center;">.</td> <td>3,6</td> <td style="text-align: center;">-</td> <td></td> </tr> <tr> <td>.(                    3 )</td> <td style="text-align: center;">.</td> <td>5,0</td> <td style="text-align: center;">-</td> <td></td> </tr> </table>	.(                    5 )	.	3,5	-		.(                    5 )	.	3,6	-		.(                    3 )	.	5,0	-	
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.(                    3 )	.	5,0	-													
<p>4.8 Each competitor will be required to submit a Bid Bond in an amount of 10% of the value of the offer for each of the offers that the competitor submits.</p>	<p style="text-align: right;">8/4</p> <p style="text-align: center;">(Bid Bond)</p> <p style="text-align: right;">%10</p>															
<p>4.9 After the closing date of receiving offers, the highest offers for the Acquisition Fee will be identified and the procedures outlined in the tender document will be applied for the selection of the winner in each of the bands that are offered for competition, taking the national interests into consideration whenever necessary.</p>	<p style="text-align: right;">9/4</p>															

<p>4.10 The Acquisition Fee as described in 4.7 above shall be paid on the date of the issuance of the frequency license by the TRC. However, the winner may offers to pay the said fee in the form of annual installments, not to exceed the term of the frequency license. The amount of each annual installment will be calculated by dividing the offered Acquisition Fee by the proposed number of years for the payment of the Acquisition Fee, inflated by a compound rate of 9% per year from the date of the issuance of the frequency license to the date of the payment of each annual installment.</p>	<p>(7/4)</p> <p>10/4</p> <p>%9</p>
<p>4.11 In case that the TRC accepts the deferred payment method, the winner shall submit to the TRC a bond in the amount of the Acquisition Fee to secure the payment of the installments.</p> <p>The bond shall be valid until the full payment of the Acquisition Fee and its amount will be reduced annually by an amount equal to the paid installment. The bond will be released upon the full payment of the Acquisition Fee.</p> <p>The bond will be confiscated if the winner fails to pay the Acquisition Fee installments on the specified dates.</p>	<p>11/4</p>
<p>4.12 If the licensee does not start operating the FBWA network and providing the related services in the licensed areas, the TRC shall have the right to take the following actions:</p>	<p>12/4</p> <p>(FBWA)</p>

<p>a) If the service is not provided in Amman Governorate within one year from the grant of the frequency license, the TRC may enforce the revocation of the license and the confiscation of the paid acquisition fees and/or the installments bond as applicable.</p> <p>b) If the service is provided in Amman Governorate and not provided in any of the other Governorates within two years from the grant of the license, the TRC may amend the license by dropping the licensee's right of use of the frequencies in the concerned Governorate(s).</p>	<p>( )</p> <p>/</p> <p>( )</p>
<p>4.13 The TRC will set out the general and special conditions as well as the procedural details for the implementation of the tender process and incorporate them in the tender document.</p>	<p>13/4</p>
<p>4.14 The tender document referred to in 4.13 above will incorporate a treatment for the following cases that may arise from the tender process:</p> <p>1) The priorities that may be applied in case of a tie between any of the competitors in the amounts that are offered in any of the bands.</p> <p>2) The criteria that will be referred to by the TRC in making judgment in the case of 4.12 above.</p>	<p>14/4</p> <p>13/4</p> <p>:</p> <p>(1</p> <p>(2</p> <p>12/4</p>

**5. The Annual Returns (Frequency Fees)**

The Annual Returns (frequency fees) for each of the available lots for the purpose of FBWA shall be in accordance with the prevailing tariff that the TRC sets in accordance with its authorities under the telecommunications law, as follows:

- In the 3.5 GHz band ( JD 564480)
- In the 3.6 GHz band ( JD 564480)
- In the 5.0 GHz band ( JD 358400)

Where the details of calculating these annual revenues have been issued by the TRC in a separate document entitled " Formula for Computing the Annual Returns for Licensing of frequencies for Fixed Broadband Wireless Access Services ".

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