

This draft intends to seek comments of all those interested on the subject, so as to rationalize frequency spectrum fees and pricing with the objective of establishing a fair and transparent pricing structure in order to promote uniformity, consistency and efficiency in spectrum management.

All interested are requested send their comments and views on this draft latest by 13th January, 2012. Your comments may be sent in writing, or through email to Mr. Ali Asghar, Director General (Law & Regulations), PTA Headquarters F-5/1, Islamabad. E-mail: aliasghar@pta.gov.pk

In exercise of powers conferred under clause (o) of sub-section (2) of section 5 of the Pakistan Telecommunication (Re-organization) Act, 1996, the Pakistan Telecommunication Authority is pleased to make the following regulations:

PART – I

PRELIMINARY

1. Short title and commencement. (1) These Regulations shall be called “Spectrum Charging Rationalization Regulations, 2011”.

(2) These Regulations shall come into force from the date of gazette notification.

2. Definitions. (1) In these Regulations, unless there is anything repugnant in the subject or context: -

(a) **“Act”** means Pakistan Telecommunication (Re-organization) Act, 1996 (XVII of 1996);

(b) **“Aeronautical mobile service”** means a mobile service between aeronautical stations and aircraft stations, or between aircraft stations, in which survival craft stations may participate, emergency position- indicating radio beacon stations may also participate in this service on designated distress and emergency frequencies;

(c) **“Authority”** means the Pakistan Telecommunication Authority established under section 3 of the Act;

(d) **“Base Station”** means in radio communications, a base station is a wireless communications station installed at a fixed location;

- (e) **“Broadcasting service”** means a radio communication service in which live transmissions are intended for direct reception by the general public. This service may include sound transmissions, television transmissions or other types of transmission **OR** “point to multipoint service which is provided using various frequency bands like low frequency, medium frequency, high frequency, very high frequency and ultra high frequency as per the ITU allocations”;
- (f) **“Fixed point to point microwave”** means a fixed radio communication service between specified fixed points;
- (g) **“Fixed Satellite Service” means** A radio communication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite to-satellite links, which may also be operated in the inter-satellite service;
- (h) **“GT”** means Gross Tonnage used to express unit less volume of ship;
- (i) **“HF”** means high frequency ranging between 3 to 30 MHz;
- (j) **“Microwave Spectrum”** means electromagnetic energy ranging from approximately 1 GHz to 100 GHz with most commonly used applications in the range of 1 to 40 GHz ;
- (k) **“Maritime Service”** means service used to provide ship to ship and ship to coastal station communication. ;
- (l) **“Mobile Station” means** the wireless end user terminal equipment which can communicate on a radio link whilst moving around a wide geographic area;
- (m) **Mobile Satellite Service means** a radio communication service between mobile earth stations and one or more space stations, or between space station used by this service;
- (n) **“MMDS” means** Multichannel Multipoint distribution system;
- (o) **“Person”** means and includes any individual or natural person, any firm, corporation, partnership, trust, limited company, government entity or other entity recognized under any law for the time being in force;
- (p) **“Private Land Mobile Wireless Services”** means a mobile service between base station and land mobile station or, between land mobile stations;
- (q) **“Radio Frequency Spectrum”** means a subset of the electromagnetic waves lying

between the frequencies from 9 kilohertz to 300 gigahertz;

- (r) **“Rules”** means all or any rules issued by the Federal Government under Section 57 of the Act;
- (s) **“Regulations”** means all regulations issued by the Authority including without limitation, these regulations;
- (t) **“Spectrum Pricing”** refers to a range of spectrum management activities and tools including administrative fees, spectrum usage and spectrum prices determined by way of Government Policy and market mechanisms;
- (u) **“Satellite TV service”** means is television programming delivered by the means of communications satellite and received by an outdoor antenna, usually a parabolic mirror generally referred to as a satellite dish, and as far as household usage is concerned, a satellite receiver either in the form of an external set-top box or a satellite tuner module built into a TV set;
- (v) **“UHF”** means Ultrahigh frequency ranging between 300 to 3000 MHz; and
- (w) **“VHF”** means Very high frequency ranging between 30 to 300 MHz;
- (2) The parameters like (A.F, Wf, Pf, CEF, GHz, TL/T etc.) used in the formulas in Part – II have their respective values in accordance with the category of the service defined therein.
- (3) Words and expressions used herein but not defined shall have the same meaning assigned to them in the Act, Rules, and Regulations.

3. Scope and Applicability – These regulations shall rationalize frequency spectrum fees and pricing with the objective of establishing a fair and transparent pricing structure in order to promote uniformity, consistency and efficiency in spectrum management. These regulations shall cover the determination of charges for following categories of radio services:

- (i) Private Land Mobile Wireless Service;
- (ii) Point-to-point Fixed Links in UHF,VHF,HF;
- (iii) Fixed point to point microwave;
- (iv) AM and FM Broadcasting Radio Service;
- (v) Aeronautical and Maritime Service;
- (vi) Earth Station and TV/MMDS Satellite Communication Services

(2) Determination of charges for allocation of the access spectrum assigned through auction, beauty contest etc. is beyond the scope of these Regulations.

PART-II

APPLICATION FOR THE ALLOCATION OF RADIO FREQUENCY SPECTRUM

4. **Application for grant of Radio Frequency Spectrum.**-An application for the grant of a radio frequency spectrum shall be made to the Authority in the modes and the format placed on the PTA website at www.pta.gov.pk.

5. **Application Processing Fee.**-An application for the allocation of radio frequency spectrum shall be accompanied with an application processing fee as specified in Annex-A to these Regulations.

6. **Procedure for grant of Radio Frequency Spectrum.**-(1) On receipt of an application for the grant of radio frequency spectrum the Authority shall examine the application on merits for allocation of radio frequency spectrum.

(2) The Authority upon satisfactory evaluation of an application complete in all respects shall within thirty (30) days forward the application to the Board for allocation of radio frequency spectrum:

Provided that the Authority may reject an application after recording reasons leading to denial..

PART-III

RADIO FREQUENCY SPECTRUM CHARGES

7. **Annual Spectrum Charges Calculation (1)** Upon allocation of the radio frequency spectrum the charges shall be calculated and payable in accordance with the formulas specified below:

(a) **Private Land Mobile Wireless Services**

A Single weighted formula shall apply for HF, VHF, UHF bands, applicable for a networked environment consisting of both, the Base station and End terminals. The formula is applicable for both point to point as well as point to multi point links. The only difference is in their Weighting factors which are dependent on the type of the band. The formula shall be as follows:

$$A.F = W_F * (P_F * TL/T + \exp (CEF))$$

Where,

TAF: Total Annual Spectrum Fee = **Link Cost + Terminal cost = $A.F(links) + A.F(Terminals)$**

Note: The above generalized formula with different weighting factors shall be used twice, once for links and then again for number of terminals, to come with the total Annual Spectrum Fee.

For point to multipoint link type the ‘Weighting Factors’ applied are:

For UHF Base Station	$W_f = 1200$
For UHF Mobile	$W_f = 250$,
For VHF Base Station	$W_f = 1400$,
For VHF Mobile	$W_f = 325$,
For HF Base Station	$W_f = 1600$, (subject to availability)
For HF Mobile	$W_f = 375$.

TL/T: Total links/ Terminals

In case of:

Base Station: Links:	No. of channels (transmit + receive)
Mobile Station: Terminals:	No. of Terminals/ Mobile stations/ Walkie Talkies/Pagers

CEF: Channel Efficiency Factor (1 for 12.5 KHz, $\frac{1}{2}$ for 6.25 KHz, etc)

Note: For $CEF > 1$ in the formula CEF shall remain “1” but A.F shall be multiplied with the actual CEF factor (for 25 KHz, $CEF = 1$ in formula but at the end A.F will be multiplied by 2 as of actual CEF).

Base Station: Base station/ Radio Station/ Repeater/ Multi Repeater

Note: i) If only one Mobile Station/ Walkie Talkie talks only to one base station then the calculation shall be made for ‘1’ Base Station and ‘1’ Mobile Station. Number of channel links needs to be further identified.

ii) Base station with integrated relay facility shall be considered as ‘1’ Base Station with two or multiple channels, as the case maybe, as long as it remains an integrated relay.

iii) Each integrated Repeater Station will be considered as a separate base station.

iv) A Point-to-Point channel within a Point-to-Multi point system shall be considered a channel within Point-to-Multi Point system.

For point to point fixed links the ‘Weighting Factors’ applied are:

Weighting factor for UHF fix links: 3000

Weighting factor for VHF fix links: 3600

Weighting factor for HF fix links: 4500

For Walkie Talkie and Paging services the ‘Weighting Factors’ applied are:

Wf for UHF Walkie Talkie Terminal:	150
Wf for VHF Walkie Talkie Terminal:	250
Wf for UHF Walkie Talkie Base Station:	400
Wf for VHF Walkie Talkie Base Station:	500
Wf for UHF Paging Station:	1200
Wf for VHF Paging Station:	1400
Wf for UHF Paging Terminal:	50
Wf for VHF Paging Terminal:	25

Note: (i) if communication is limited to only two walkie talkies communicating with each other, then 'walkie talkie Base station' weighting factor shall be used. This is merely to embed the cost of the inherent link (channel) into the walkie talkie terminal.

(ii) Walkie Talkie annual Fee (Terminal/ Station) for non Commercial user (Home, Toys etc) at less than 100 mW and range up to 500m is free.

For private wireless networks (HF, VHF and UHF) the 'Power Factor' applied are:

Base Station		Mobile/ Pager Terminals		Walkie Talkie	
Power(Watts)	P _F	Power(Watt)	P _F	Power(Watt)	P _F
0 < P ≤ 10W	2	0 < P ≤ 5W	2	Up To 1 W	1
10 < P ≤ 25 W	3	5 < P ≤ 25W	3	1 < P ≤ 5W	2
25 < P ≤ 50W	4	P > 25W	4	5 < P ≤ 10W	3
P > 50W	5			P > 10W	4

The sample rates for point to multi point, point to point and walkie talkie and paging services are attached at Annex-B (Table I, II ,III) respectively.

(b) Fixed Point to Point (P2P) Microwave links above 2 GHz band:

The single weighted formula applied for all fixed point to point microwave links used in Pakistan, which start above 2GHz spectrum is:

$$AF = W_F * (P_F * TL/T + CEF) * (4/ GHZ)$$

Where,

the 'Weighting Factor' which is dependent on the bandwidth applied are:

Bandwidth	Weighting Factor (W_F)
3.5 MHz	80
7 MHz	70
14 MHz	60
28 MHz	60
56 MHz	50

the 'Power Factor' applied are:

Power Range (Watts)	P_F
$0 < P \leq 10W$	2
$10 < P \leq 25 W$	3
$25 < P \leq 50W$	4
$P > 50W$	5

the **TL/T**: Total links/ Terminals

In case of:

Links: No. of channels (Transmit + Receive)

CEF: Channel Efficiency Factor (Total Required BW/ 12.5 KHz)

GHZ: Represents the Spectrum Spot (For e.g. for 13 GHz use 13 in formula)

The sample rates are attached at ANNEX –C (Table I)

(c) Broadcasting Services (AM & FM).-A single formula for short wave, medium wave and FM radio services consisting of radio station and end terminals. The formula is applicable for both, AM as well as FM Broadcasting transmitters (Boosters) services. The only difference is in their Weighting Factors and Power Factor which is also dependent on the type of band utilized and Power requirements to Broadcast. The formula is:

$$A.F = W_F * (P.F * TL/T * \exp Sq (CEF))$$

Where:

AF: Annual Spectrum Fee = *Link Cost*

the 'Weighting Factors' applied are:

Wf for FM low Power: 20

Wf for FM High Power: 40

Wf for AM: 40

The 'power factor' for FM Radio are:

Power Factor (P_F) for FM Radio

Power (W)	P_F
$0W < P \leq 100mW$	0
$100mW < P \leq 10W$	1
$10W < P \leq 50W$	2
$50W < P \leq 100W$	3
$100W < P \leq 250W$	4
$250W < P \leq 500W$	5
$500W < P \leq 1KW$	6
$1KW < P \leq 2KW$	7
$2KW < P \leq 3KW$	8
$3KW < P \leq 4KW$	9
$4KW < P \leq 5KW$	10

The 'power factor' for AM Radio are:

Power Factor (P_F) for AM Radio

Power (W)	P_F
$0 < P \leq 10 KW$	10
$10 < P \leq 50 KW$	15
$50 < P \leq 100 KW$	25
$100 < P \leq 200 KW$	30
$200 < P \leq 300 KW$	35
$300 < P \leq 400 KW$	40
$400 < P \leq 500 KW$	45
$P > 500KW$	50

TL/T: Total
 CEF: Required
 suppose 30 KHz for
 In case of
 Links=No. of

links/ Terminals
 BW/ 12.5 KHz (In this case
 each channel)
 Broadcasting Station:
 channels

The sample rates are attached at ANNEX –D (Table I,II)

(d) Aeronautical /Maritime Radio Navigation Services

The formula for Maritime (ship to shore) communication and aeronautical (ground to air) radio communication services consisting of radio station and end terminals/equipments is as follows:

$$A.F = W_F * (P.F * TL/T + \exp (CEF))$$

Where,

Weighting Factor (W_f) for Aeronautical and Maritime Base Station which is dependent on band are:

Link Type	Base Station	
	Weighting Factor	W_f
Point-To-Multipoint	UHF	1200
	VHF	1400
	HF	1600
Point-Point	UHF	3000
	VHF	3600
	HF	4500

Power Factor (P_F) for Aeronautical and Maritime Services

Base Station	
Power(Watts)	P_F
$0 < P \leq 10W$	2
$10 < P \leq 25 W$	3
$25 < P \leq 50W$	4
$P > 50W$	5

TL/T: Total links/ Terminals

In case of:

Base Station: Links: No. of channels (transmit + receive)

Mobile Station: Terminals: No. of Terminals/ Mobile stations/ Walkie Talkies/ Pagers

CEF: Channel Efficiency Factor (1 for 12.5 KHz, $\frac{1}{2}$ for 6.25 KHz)

For $CEF > 1$ in the formula CEF shall remains "1" but AF shall be multiplied with the actual CEF factor (for 25 KHz, $CEF=1$ in formula but at the end AF will multiplied by 2 as of actual CEF).

The spectrum cost of an application shall be: Link Cost + Terminal cost

Aeronautical and Maritime equipment fee is as follows:

Annual Aircraft equipment Fee will be charged Rs. 15,000 Per Terminal

Annual Ship equipment Fee will be charged Rs. 500 for $GT < 300$

Annual Ship equipment Fee will be charged Rs. 10,000 for $GT > 300$

The sample rates are attached at Annex- E (Table I,II)

(e) Earth Station and TV/MMDS Satellite Communication Services

The formula for TV (Terrestrial and MMDS) is as follows:

$$AF = W_F * (P_F * TL/T + CEF)$$

Where:

W_F for Analog, Terrestrial and MMDS TV = 60

W_F for Digital, Terrestrial and MMDS TV = 80

Power Factor applied for Terrestrial and MMDS TV Broadcasting are as follows:

Power (W)	P_F
$0 < P \leq 10 \text{ KW}$	1
$10 < P \leq 20 \text{ KW}$	2
$20 < P \leq 30 \text{ KW}$	3
$P > 30 \text{ KW}$	4

The sample rates are attached as ANNEX-F (Table I,II,III)

PART -IV

MISCELLENEOUS

8. General Conditions.-(1) The Authority may from time to time, review the categorization of services and Annual Charges.

(2) The frequency spectrum charges for the utilization by the Government of Pakistan shall be 50%.

(3) All charges are in Pakistani rupees or equivalent other currencies as determined by the Authority.

(4) In some cases the annual spectrum fee also include annual terminal fee associated with the spectrum.

Annex-A

Application Processing Fee		
Sr. No	Category	Application Fee
1	Amateur	PKR 500 (for the term of the license)
2	Site Registration	PKR 3,000
3	Broadcasting(BC)	PKR 3,000
4	Aeronautical	PKR 3,000
5	Ship > 300GT	PKR 3,000
6	Wireless(HF,VHF,UHF)	PKR 3,000
7	Fixed Microwave Link	PKR 3,000
8	Satellite Terminal	PKR 3,000
9	Satellite Earth Station	PKR 3,000
10	Ship < 300GT	PKR 500

Annex-B

Table I: Sample Rates for Private Wireless Services

Sample Rates for HF, VHF, UHF Private Wireless Access-link Services								
Sr. No	Category	Band	Power Brackets (W)	Wf	P_F	Channel eff Factor	Total Links Tx+Rx/ Terminals	New Proposed Annual Fee
1	Mobile Station	UHF	5 < P ≤ 25w	250	3	1	1	PKR 1,430

2	Base Station		10< P ≤25W	1200	3	1	1	PKR 6,862
3	Base Station		10< P ≤25W	1200	3	1	5	PKR 21,262
4	Base Station		10< P ≤25W	1200	3	1	10	PKR 39,262
5	Mobile Station		5< P ≤25w	325	3	1	1	PKR 1,858
6	Mobile Station		P ≤5w	325	2	1	1	PKR 1,533
7	Base Station		10< P ≤25W	1400	3	1	1	PKR 8,006
8	Base Station		25< P ≤45W	1400	4	1	5	PKR 31,806
9	Base Station	VHF	10< P ≤25W	1400	3	1	10	PKR 45,806
10	Base Station		0 < P ≤ 10W	1400	2	1	1	PKR 6,606
11	Base Station		0 < P ≤ 10W	1400	2	1	2	PKR 9,406
12	Base Station		0 < P ≤ 10W	1400	2	1	4	PKR 15,006
13	Mobile Station		5< P ≤25w	375	3	1	2	PKR 3,269
14	Base Station		10< P ≤25W	1600	3	1	1	PKR 9,149
15	Base Station	HF	10< P ≤25W	1600	3	1	5	PKR 28,349
16	Base Station		10< P ≤25W	1600	3	1	10	PKR 52,349
17	Walkie Talkie	UHF	Up to 1w	150	1	1	1	PKR 558
18	Walkie Talkie	VHF	Up to 1w	250	1	1	1	PKR 930
19	Walkie Talkie	UHF	1< P ≤ 5W	150	2	1	5	PKR 1,908
20	Walkie Talkie	VHF	1< P ≤ 5W	250	2	1	5	PKR 3,180
21	Walkie Talkie	UHF	5< P ≤10W	150	3	1	10	PKR 4,908
22	Walkie Talkie	VHF	5< P ≤10W	250	3	1	10	PKR 8,180

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Table II: Sample Rates for HF, VHF and UHF '1-1 Network' links.

Sample Annual Rates for HF, VHF, UHF "1-1 Network" Link at (12.5 KHz)								
Sr. No	Category	Band	Power Brackets (W)	W.f	P_F	Channel eff Factor	Total Links Tx+Rx/ Terminals	New Proposed Annual Fee Charges
1	Fixed link	UHF	1 < P ≤ 10W	3000	2	1	1	PKR 14,155
2	Fixed link	UHF	10-25.	3000	3	1	1	PKR 17,155
3	Fixed link	VHF	1 < P ≤ 10W	3600	2	1	1	PKR 16,986
4	Fixed link	VHF	10-25.	3600	3	1	1	PKR 20,586
5	Fixed link	HF	1 < P ≤ 10W	4500	2	1	1	PKR 21,232
6	Fixed link	HF	10-25.	4500	3	1	1	PKR 25,732

Table III: Sample Rates for Walkie Talkie and Paging Services

Sr. No	Category	Band	Power Brackets (W)	Wf	P_F	Chann el eff Factor	Total Links Tx+Rx/ Termina ls	New Proposed Annual Fee Charges
1	Walkie Talkie terminal	UHF	Up to 1w	150	1	1	1	PKR 558
2	Walkie Talkie terminal	VHF	Up to 1w	250	1	1	1	PKR 930
3	Walkie Talkie terminal	UHF	1 < P ≤ 5W	150	2	1	1	PKR 708
4	Walkie Talkie terminal	VHF	1 < P ≤ 5W	250	2	1	1	PKR 1,180
5	Walkie Talkie terminal	UHF	5 < P ≤ 10W	150	3	1	1	PKR 858

6	Walkie Talkie terminal	VHF	5 < P <= 10W	250	3	1	1	PKR 1,430
7	Walkie Talkie Station	UHF	1 < P <= 5W	400	2	1	1	PKR 1,887
8	Walkie Talkie Station	VHF	1 < P <= 5W	500	2	1	1	PKR 2,359
9	Walkie Talkie Station	UHF	5 < P <= 10W	400	3	1	1	PKR 2,287
10	Walkie Talkie Station	VHF	5 < P <= 10W	500	3	1	1	PKR 2,859
Sample Proposed Annual Rates for Pagers (Transmitters only not for User Terminal)								
1	Paging Terminal for 12.5 KHz	UHF	1 < P <= 10W	50	2	1	1	PKR 236
2	Paging Station for 12.5 KHz	UHF	1 < P <= 10W	1200	2	1	1	PKR 5,662
3	Paging Terminal for 12.5 KHz	VHF	1 < P <= 10W	25	2	1	1	PKR 118
4	Paging Station for 12.5 KHz	VHF	1 < P <= 10W	1400	2	1	1	PKR 6,606

Annex-C

Table I: Sample Rates for Microwave Point-to-Point Links (with varying Bandwidth)

Spectrum Range (GHz)	PF: 3		BW =3.5MHz		BW= 7.0MHz		BW= 14MHz		BW= 28MHz		BW =56MHz	
			W_F= 80	W_F= 100	W_F= 70	W_F= 85	W_F= 60	W_F= 75	W_F= 60	W_F= 75	W_F= 50	W_F= 65
	Basic Ratesⁱ (PKR)	Non-Basic Ratesⁱⁱ (PKR)	Basic Rates (PKR)	Non-Basic Rates (PKR)	Basic Rates (PKR)	Non-Basic Rates (PKR)	Basic Rates (PKR)	Non-Basic Rates (PKR)	Basic Rates (PKR)	Non-Basic Rates (PKR)	Basic Rates (PKR)	Non-Basic Rates (PKR)
2	45760	57200	79,240	96,220	135,120	168,900	269,520	336,900	448,600	583,180		
3	30507	38133	52,827	64,147	90,080	112,600	179,680	224,600	299,067	388,787		
4	22880	28600	39,620	48,110	67,560	84,450	134,760	168,450	224,300	291,590		
5	18304	22880	31,696	38,488	54,048	67,560	107,808	134,760	179,440	233,272		
6	15253	19067	26,413	32,073	45,040	56,300	89,840	112,300	149,533	194,393		
7	13074	16343	22,640	27,491	38,606	48,257	77,006	96,257	128,171	166,623		
8	11440	14300	19,810	24,055	33,780	42,225	67,380	84,225	112,150	145,795		
9	10169	12711	17,609	21,382	30,027	37,533	59,893	74,867	99,689	129,596		
10	9152	11440	15,848	19,244	27,024	33,780	53,904	67,380	89,720	116,636		
11	8320	10400	14,407	17,495	24,567	30,709	49,004	61,255	81,564	106,033		
12	7627	9533	13,207	16,037	22,520	28,150	44,920	56,150	74,767	97,197		
13	7040	8800	12,191	14,803	20,788	25,985	41,465	51,831	69,015	89,720		
14	6537	8171	11,320	13,746	19,303	24,129	38,503	48,129	64,086	83,311		
15	6101	7627	10,565	12,829	18,016	22,520	35,936	44,920	59,813	77,757		
16	5720	7150	9,905	12,028	16,890	21,113	33,690	42,113	56,075	72,898		
17	5384	6729	9,322	11,320	15,896	19,871	31,708	39,635	52,776	68,609		
18	5084	6356	8,804	10,691	15,013	18,767	29,947	37,433	49,844	64,798		
19	4817	6021	8,341	10,128	14,223	17,779	28,371	35,463	47,221	61,387		
20	4576	5720	7,924	9,622	13,512	16,890	26,952	33,690	44,860	58,318		
21	4358	5448	7,547	9,164	12,869	16,086	25,669	32,086	42,724	55,541		
22	4160	5200	7,204	8,747	12,284	15,355	24,502	30,627	40,782	53,016		
23	3979	4974	6,890	8,367	11,750	14,687	23,437	29,296	39,009	50,711		
24	3813	4767	6,603	8,018	11,260	14,075	22,460	28,075	37,383	48,598		
25	3661	4576	6,339	7,698	10,810	13,512	21,562	26,952	35,888	46,654		
26	3520	4400	6,095	7,402	10,394	12,992	20,732	25,915	34,508	44,860		
27	3390	4237	5,870	7,127	10,009	12,511	19,964	24,956	33,230	43,199		
28	3269	4086	5,660	6,873	9,651	12,064	19,251	24,064	32,043	41,656		
29	3156	3945	5,465	6,636	9,319	11,648	18,588	23,234	30,938	40,219		
30	3051	3813	5,283	6,415	9,008	11,260	17,968	22,460	29,907	38,879		
31	2952	3690	5,112	6,208	8,717	10,897	17,388	21,735	28,942	37,625		
32	2860	3575	4,953	6,014	8,445	10,556	16,845	21,056	28,038	36,449		
33	2773	3467	4,802	5,832	8,189	10,236	16,335	20,418	27,188	35,344		
34	2692	3365	4,661	5,660	7,948	9,935	15,854	19,818	26,388	34,305		
35	2615	3269	4,528	5,498	7,721	9,651	15,401	19,251	25,634	33,325		
36	2542	3178	4,402	5,346	7,507	9,383	14,973	18,717	24,922	32,399		
37	2474	3092	4,283	5,201	7,304	9,130	14,569	18,211	24,249	31,523		
38	2408	3011	4,171	5,064	7,112	8,889	14,185	17,732	23,611	30,694		

i) Basic Rates (in PKR) as Annual Spectrum Fee for 'Basic Licensee' (not applicable to CMTOs)

ii) Non-Basic Rates (in PKR) as Annual Spectrum Fee for 'non-Basic Licensee',
Basic Licensee means Local Loop, Long Distance & International and CMTOs

Annex-D

TableI : **Samples** Rates for FM Broadcasting per transmitter (booster).

FM Radio 87-108 MHz New Proposed Rates B.W 30Khz									
Sr. No	Category	Band	Power (W)	W_f	P F	Channel eff Factor	Total Links Tx+Rx/ Terminals	New Proposed Annual Fee Charges	Comments
1	Low Power FM	FM 87-108 MHz	$0W < P \leq 100mW$	20	0	2.4	1	PKR 0	>) No Advertisement income and >) No Profit earned from Service
2	Low Power FM	FM 87-108 MHz	$100mW < P \leq 10W$	20	1	2.4	1	PKR 6,347	
3	Low Power FM	FM 87-108 MHz	$10W < P \leq 50W$	20	2	2.4	1	PKR 12,694	
4	Low Power FM	FM 87-108 MHz	$50W < P \leq 100W$	20	3	2.4	1	PKR 19,041	
5	FM	FM 87-108 MHz	$100W < P \leq 250W$	40	4	2.4	1	PKR 50,776	>) Profit making Stations
6	FM	FM 87-108 MHz	$250W < P \leq 500W$	40	5	2.4	1	PKR 63,470	
7	FM	FM 87-108 MHz	$500W < P \leq 1KW$	40	6	2.4	1	PKR 76,164	
8	FM	FM 87-108 MHz	$1KW < P \leq 2KW$	40	7	2.4	1	PKR 88,858	
9	FM	FM 87-108 MHz	$2KW < P \leq 3KW$	40	8	2.4	1	PKR 101,551	
10	FM	FM 87-108 MHz	$3KW < P \leq 4KW$	40	9	2.4	1	PKR 114,245	
11	FM	FM 87-108 MHz	$4KW < P \leq 5KW$	40	10	2.4	1	PKR 126,939	

Table II :**Samples** Rates for AM Broadcasting per transmitter

AM Radio (SW 1800–30,000 kHz MW 526.5 kHz to 1606.5 kHz) B.W

9Khz								
Sr. No	Category	Band KHZ	Power (W)	W_F	P_F	Channel eff Factor	Total Links Tx+Rx/ Terminals	New Proposed Annual Fee Charges
1	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$0 < P \leq 10$ KW	500	10	0.72	1	PKR 8,397
2	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$10 < P \leq 50$ KW	500	15	0.72	1	PKR 12,595
3	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$50 < P \leq 100$ KW	500	25	0.72	1	PKR 20,992
4	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$100 < P \leq 200$ KW	500	30	0.72	1	PKR 25,190
5	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$200 < P \leq 300$ KW	500	35	0.72	1	PKR 29,388
6	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$300 < P \leq 400$ KW	500	40	0.72	1	PKR 33,587
7	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$400 < P \leq 500$ KW	500	45	0.72	1	PKR 37,785
8	SW & MW AM	1800 - 30,000, 526.5 - 1606.5	$P > 500$ KW	500	50	0.72	1	PKR 41,983

Annex-E

Table: 1 New Proposed **samples** Rates for Ground to Air communication.

Proposed Charges for Aeronautics (108-137 & 230-380 MHz) and Maritime (156-162.025 & 162.025-174 MHz) for BW 12.5, 25 KHz							
Sr. No	Category	Power Brackets (W)	W_F	P_F	Channel eff Factor	Total Links/ Terminals	Proposed Annual Fee Charges
1	Base Station For 12.5Khz	10-25.	3000	3	1	1	PKR 17,155
2		25-50.	3000	4	1	1	PKR 20,155
3	Base Station For 25Khz *	10-25.	3000	3	1	1	PKR 34,310
4		25-50.	3000	4	1	1	PKR 40,310
5		25-50.	3000	4	1	5	PKR 136,310
6		25-50.	3000	4	1	10	PKR 256,310

* For CEF>1 in the formula CEF shall remains "1" but AF shall be multiplied with the actual CEF factor (for 25 KHz, CEF=1 in formula but at the end AF will multiplied by 2 as of actual CEF).

Table I: Rates for Satellite TV Services

Rates for Satellite TV Broadcasting	
Rate for Free To air satellite TV communication is 1300\$/year/ Channel	
Rates for Subscribed satellite TV communication(DTH) is 10 Rs/year/ Channel/ Subscriber	
Rates for satellite TV communication Down Link Head end is 1300\$/year/ Channel	

Table II: Rates for Analog, Terrestrial and MMDS TV Broadcasting.

Rates for Terrestrial TV Broadcasting services per booster per channel; channel =7Mhz						
Sr. No	Power (W)	W_F	P_F	Channel eff Factor	Total Links Tx+Rx/ Terminals	Annual Fee Charges
1	$0 < P \leq 10$ KW	60	1	560	1	PKR 33,600
2	$10 < P \leq 20$ KW	60	2	560	1	PKR 67,200
3	$20 < P \leq 30$ KW	60	3	560	1	PKR 100,800

Table III: Rates for Digital, Terrestrial and MMDS TV Broadcasting services per booster per channel; Channel = 4.5 MHz						
Sr. No	Power (W)	W_F	P_F	Channel eff Factor	Total Links Tx+Rx/ Terminals	Annual Fee Charges
1	$0 < P \leq 10$ KW	80	1	360	1	PKR 28,800
2	$10 < P \leq 20$ KW	80	2	360	1	PKR 57,600
3	$20 < P \leq 30$ KW	80	3	360	1	PKR 86,400

Table: IV Rates for Satellite Earth Stations & Terminals

Earth Station (Mobile, Permanent other Than C/ Extended C-Bands, Permanent C/ Extended C- Bands), VSAT

Sr. No	Category	Rates	
1	Mobile Satellite Earth Stations	PKR 25,000	
2	Permanent Earth Stations other than C/ Extended C- Bands	PKR 5,000	
3	Permanent Earth Stations C/ Extended C- Bands	PKR 10,000	
4	VSAT Network	Hub Terminal	PKR 25,000
		1-5 Terminals	PKR 9,000
		6-10 Terminals	PKR 7,000
		Terminal > 15	PKR 5,000