Communications Regulatory Authority State of Qatar

هيئة تنظيم الاتصالات دولة قطر

Spectrum Plan for AFC ASIAN CUP™ QATAR 2023

January 2024

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1. Summary

The AFC2023 2022™

1.1 The AFC ASIAN CUP™ QATAR 2023 (AFC2023) will take place between 12 January and 10 February 2024. It will be staged at nine Stadiums, across Qatar, where 24 teams will be playing total 51 matches during the event.

CRA Role

1.2 The Communications Regulatory Authority "CRA" is the responsible authority for regulating and managing all the affairs relating to the radio spectrum use. As such, CRA is responsible for organizing a full spectrum plan for AFC2023 in accordance with the Decree Law No. (34) of 2006 on the promulgation of the Telecommunications Law as amended by the Law No. (17) of 2017, the Executive By-Law for the Telecommunications Law and the CRA Strategy 2020-2024.

1.3 This responsibility must be seen in the context of the guarantee given by the Government of the State of Qatar (Government) to the Asian Football Confederation (AFC) in support of Qatar's bid for the Event.

Spectrum Requirements

1.4 Wireless applications will play an important role both in the build-up to and during the Event. CRA expects spectrum to be required primarily for three broad categories of applications:

- Private Mobile Radio (PMR);
- Broadcasting by the Host Broadcaster for the Event (HB), the accredited Media/ Broadcasters that have contracted with the AFC/ LOC to broadcast the Event;
- Short Range devices such as wireless microphones, assistive listening devices, RFID, WLAN/ RLAN, etc. mainly used by the MRLs, press users, service providers and Participating Member Associations (PMAs).

1.5 Support services (e.g. Ceremonies) might also require more spectrum to fulfil their roles at AFC2023.

Stakeholders

1.6 CRA is working closely with the Local Organizing Committee (LOC) of AFC2023 and other domestic stakeholders. CRA will continue the discussions with the other stakeholders, both in Qatar and overseas, with an interest in the use of wireless applications at AFC2023 as appropriate.

2. Introduction

Scope

2.1 This document defines the spectrum plan for the AFC2023 based on the data from the past major international sport events and the status of currently assigned spectrum in Qatar. This document sets out the current analysis of the spectrum requirements of the AFC2023. It also explores the possibility of using spectrum more efficiently to meet those requirements.

2.2 It also aims to promote orderly spectrum usage by notifying stakeholders the spectrum application procedure and the implementation of radio spectrum monitoring.

Spectrum Management

2.3 Spectrum is a fundamental, finite and valuable national resource which belongs to the State of Qatar, and which the CRA is charged with managing on behalf of the State.

2.4 Spectrum is important to all sectors of the communications services industry and other strategic industries. There are international regulatory frameworks for the management of spectrum and regulators world-wide are continually reviewing the way in which spectrum policy, allocation and assignments are determined. This helps to ensure that the resources can be fairly distributed and used to optimum national and economic benefit.

Radio Spectrum License/ Authorization

2.5 No person shall operate any radio equipment or make any use of radio frequencies, without obtaining a radio spectrum license or a radio frequency authorization from the CRA.

2.6 The Licensee is obliged to use radio spectrum in accordance with the terms and conditions specified in the radio spectrum license or in the radio frequency authorization.

Spectrum Fees Considerations

2.7 The spectrum fee is currently calculated as per spectrum fee policy and fee schedule that was levied as per Decision of the Minister of Information and Communication Technology No. (15) of 2015 in place since July 8, 2015.

2.8 The schedule is used to calculate fees for different frequency bands according to the technical parameters such as transmit power, area size and bandwidth per channel etc. for each authorized

user / licensee.

2.9 The per MHz spectrum fee for terrestrial radio frequency services as per this decision in various bands is shown in the table in Annex 1.

2.10 The schedule for calculating the satellite-based services in various bands as per the technical perimeters authorized for each user/ licensee is shown in Annex 2.

2.11 However, there are some categories (like AFC Contractors and Media Delegates) that are exempted from any applicable spectrum fees for the AFC2023 and associated events.

3. CRA Approach and Assumptions

Approach

3.1 CRA approach to spectrum planning for the AFC2023 will take into consideration the following regulatory instruments, now in force, which are already published and available on the CRA website:

3.1.1 Qatar Radio Spectrum Policy

3.1.2 Qatar National Frequency Allocation Plan

3.1.3 Qatar Radio Spectrum Outlook 2022

3.1.4 Spectrum Licensing Regulatory Framework

3.1.5 Class License for Short Range Devices

3.2 Different applications will require different quantum of spectrum and operate at different frequencies with different requirements to prevent interference. This will affect the ability to share spectrum in the same location with other applications.

Assumptions

3.3 CRA assumes to spectrum planning for the AFC2023 the following:

3.3.1 All spectrum requirements will be sent to CRA by end of October 2023 for evaluation and necessary action.

3.3.2 Any requests received after October 2023 prior to the event or during the event would be processed on an emergency basis through an expediated workflow.

However, priority to spectrum would be given to the requests received earlier than three months period. Hence it is encouraged that all spectrum requirements are submitted as early as possible to ensure their assignment.

3.3.3 All applicants will require spectrum for operations both within and outside venues. Spectrum will be required for partners and venue setup ahead the Event;

3.3.4 Wireless equipment will be re-exported or returned outside the country, to some extent, after the end of the Event. Equipment retained in the county must be authorized before the use as per the Applicable Regulatory Framework. More information is available on CRA website (www.cra.gov.qa).

4. Spectrum for Wireless Applications

Minimum requirements for operation

4.1. The minimum requirements are made for reasons related to the effective and appropriate use of the radio spectrum, in particular, maximizing spectrum utilization.

4.2. For the following wireless applications, a high-level description of how the spectrum is used for AFC2023 is given. This, therefore, stipulates the necessary equipment parameters for the licensing of the Event.

4.3. The technical parameters specified below are applied to achieve the desired level of compatibility within the Event services and with other radiocommunications services, whilst promoting enterprise, innovation and competition.

4.4. Necessary technical information is provided to facilitate access to the Event spectrum by making clear the assumptions that are made in planning the use of the Event spectrum.

4.5. In each table below, the mentioned “Reference Standard” is for guidance purposes and is assumed to be fulfilled in frequency planning and defining the equipment type. Hence, full compliance with which is not mandatory.

4.6. The term “Available” in the Notes in the below tables refers to the channel availability, while the frequency assignment will be on first come first serve basis.

4.7. The term “Limited Availability” in the Noted in the below tables refers to the channel availability with stringent constraints.

Private Mobile Radio

4.8. Private Mobile Radio (PMR) expected to be used to cover all activities needed to organize a successful Event. This includes private security services, sport services, transport, and the management of the venues, ceremonies, catering, spectator services and ticketing. Other PMR users will include partners, broadcasters and LOC's suppliers.

4.9. To date, handheld radios have used analogue technologies. However, digital mobile radio (DMR) is also allowed and is available in the market.

4.10. Users are likely to bring their own wireless equipment into Qatar. For such equipment, CRA anticipates a duplex split of 10 MHz, with the majority of radios using 6.25 kHz and 12.5 kHz channels and the rest 25 kHz channels.

4.11. Overall, CRA believes that a TETRA trunk system, some analogue PMR base stations and a mix of DMR and analogue PMR systems will be used at AFC2023.

4.12. Encryption of the mobile radio is subject to approval from security agencies.

Minimum Requirements for PMR

Frequency Band	Duplex Spacing	Channel Bandwidth	Remarks
360 – 380 MHz	10 MHz	DMR 6.25 kHz PMR 12.5 kHz	Available
406.200 - 410.000	N/A (Simplex Channels)	DMR 6.25 kHz PMR 12.5 kHz	Available
450 – 470 MHz	10 MHz	DMR 6.25 kHz PMR 12.5 kHz	Limited Availability
418 – 420 MHz 428 – 430 MHz	10 MHz	DMR 6.25 kHz PMR 12.5 kHz TETRA 25 kHz	Limited Assignments
PMR446			Not Allowed

Wireless Microphones

4.13. Wireless microphones are mainly used by broadcasters or event's organizers to capture interviews, music or sounds. They can be handheld, or body worn, with integrated or body-worn transmitters. Wireless microphones are generally low power (50-100 mW), though some require 1 W. They are currently analogue because of the audio lag incurred when using digital technology. The bandwidth required is 200 kHz per channel.

4.14. Wireless Microphone systems operating on 2.4 GHz and 5 GHz bands are not allowed. On the other hand, the use of Wireless microphones which operate on 1880 – 1900 MHz will be restricted, and it is not guaranteed.

Minimum Requirements for Wireless microphones

Frequencies or Frequency Band Edges (MHz)	Maximum Radiated Level	Typical Channel Bandwidth	Notes	Reference Standard
174.000 - 216.000	50 mW ERP	200 kHz	Use of the bands is on a tuning range basis.	EN 300 422
470.000 - 694.000	50 mW ERP	200 kHz	Use of the bands is on a tuning range basis.	
823.000 - 826.000	20 mW EIRP	200 kHz		
823.000 - 826.000	100 mW EIRP	200 kHz	Restricted to body worn microphones	
826.000 - 832.000	100 mW EIRP	200 kHz		

Audio Links

4.15. Audio links include wireless radio equipment designed or adapted for telephony, for the purpose of carrying monophonic or stereophonic music and speech broadcasting signals or for carrying multiple talkback signals and audio distribution systems (ADS).

Minimum Requirements for Audio Links

Frequencies or Frequency Band Edges (MHz)	Maximum Radiated Level	Typical Channel Bandwidth	Notes	Reference Standard
174.000 - 216.000	5 W ERP	12.5 kHz	For on-site use	EN 300 454
470.000 - 694.000	5 W ERP	12.5 kHz	For on-site use	

Talkback

4.16. Talkback is an intercom system mainly used by broadcasters to give directions of the director instantly to all those concerned in making the program and production-team members such as camera operators, reporters, interviewers, presenters, sound operators, lighting operators and engineers.

4.17. It uses PMR-like technology but, because high-quality sound is required, typically uses 200 kHz channels. However, 12.5 kHz channels can suffice, and older equipment tends to use smaller bandwidths anyway.

Minimum Requirements for Talkback

Frequencies or Frequency Band Edges (MHz)	Maximum Radiated Level	Typical Channel Bandwidth	Notes	Reference Standard
29.700 - 47.000	5 W ERP	12.5 kHz	For on-site use.	EN 300 086
146.000 - 153.000	5 W ERP	12.5 kHz	For on-site use.	
360.000 - 380.000	5 W ERP	12.5 kHz	For on-site use.	
406.200 - 410.000	5 W ERP	12.5 kHz	For on-site use.	
450.000 - 470.000	5 W ERP	12.5 kHz	For on-site use with Limited Availability	
470.000 - 694.000	5 W ERP	12.5 kHz	For on-site use.	

Video Links

4.18. Wireless radio equipment designed or adapted for carrying video broadcast together with music and/or speech signals.

4.19. Applications include wireless cameras, portable video links and point-to-point video links.

Minimum Requirements for Video Links

Frequencies or Frequency Band Edges (GHz)	Maximum Radiated Level	Typical Channel Bandwidth	Notes	Reference Standard
1.990 - 2.110	5 W ERP	10 MHz	Priority maybe given to the Host Broadcaster	EN 302 064
2.200 - 2.290	1 W ERP	10 MHz	For low-power wireless cameras only. Priority maybe given to the Host Broadcaster	
2.290 - 2.300	1 W ERP	10 MHz	For low-power wireless cameras only.	
2.400 - 2.500	1 W ERP	20 MHz	Non-Interference Non-Protection basis. Evaluation on case-by-case basis only, without guarantee for authorization.	
5.470 - 5.725 5.725 - 5.875	33 dBm ERP	20 MHz		
7.110 - 7.250	20 dBW ERP	Varies	Limited Availability	
7.300 - 7.410	20 dBW ERP	Varies	Limited Availability	
7.410 - 7.425	20 dBW ERP	Varies	Limited Availability	
8.460 - 8.500	20 dBW ERP	Varies	Limited Availability	
10.000 - 10.680	20 dBW ERP	Varies	Available	
11.700 – 12.500	20 dBW ERP	Varies	Available	
12.200 - 12.475	20 dBW ERP	Varies	Available	
48.000 - 48.400	30 dBW ERP	100 MHz	Available	

Telemetry and Telecommand Links

4.20. Wireless radio equipment designed or adapted for the remote control of cameras and other program making equipment and for signaling.

4.21. Also, they might be used to measure and record competitions and to control equipment for ceremonies.

Minimum Requirements for Telemetry and Telecommand Links

Frequencies or Frequency Band (MHz)	Maximum Radiated level	Typical Channel Bandwidth	Notes	Reference Standard
360.000 - 380.000	1 W ERP	12.5 kHz	Available	EN 300 113
403.000 – 406.000	1 W ERP	6.25 kHz 12.5 kHz	Limited Availability	
450.000 - 470.000	1 W ERP	12.5 kHz	Limited Availability	
470.000 - 694.000	1 W ERP	12.5 kHz 25 kHz	Available Some specific channels within this range (Center Frequencies of 490 MHz and 506 MHz, with channel bandwidth of 8 MHz each) are exclusively used for Digital Terrestrial TV Broadcast, and they are on-air and shall not be considered for assignment for any application.	

Point-to-Point links

4.22. Point-to-point links might be required to connect venues or to provide video signals back to an outside-broadcasting truck, for example.

Minimum Requirements for Point-to-Point Links

Frequencies or Frequency Band (GHz)	Maximum Radiated level	Typical Channel Bandwidth	Notes	Reference Standard
6.425 – 7.125	varies	varies	Link by link basis	EN 301 126

7.145 – 7.425	varies	varies		
7.425 – 7.725	varies	varies		
22.000 – 23.600	varies	varies		
71.000 – 76.000	varies	varies		
81.000 – 86.000	varies	varies		

DECT

4.23. Digital Enhanced Cordless Telecommunications, usually known by the acronym DECT, is a standard primarily used for creating cordless telephone systems.

4.24. In PMSE, DECT devices are mainly used for talkback and intercom applications.

Minimum Requirements for DECT

Frequencies or Frequency Band (MHz)	Maximum Radiated level	Typical Channel Bandwidth	Notes	Reference Standard
1880.00 - 1900.00	10 mW	1.728 MHz	Available	EN 300 175 EN 301 406

5. Emergency Applications

Introduction

5.1. Any requests received after 1st of November 2023 prior to the Event or during the Event would be processed on an emergency basis through an expediated workflow.

5.2. Priority to access spectrum would be given to the requests received earlier than three months period. Hence it is encouraged that all spectrum requirements are submitted as early as possible to ensure their assignment.

5.3. Certain parts of unassigned spectrum in each category of use as mentioned in section 4 would be reserved for such applications. This would avoid delays in conducting the coverage and interference analysis for such cases.

6. License-Exempt Spectrum and Applications

Introduction

6.1. Radio equipment that complies with the technical limits covered under the Class License for Short Range Devices is exempted from obtaining a separate frequency license.

6.2. However, authorization from CRA is required for such equipment (and their accessories) before being used at AFC2023 venues.

6.3. Some license-exempt equipment will require specific frequency assignment from CRA (for example, but not limited to, the wireless microphones) in advance.

Minimum requirements for License-Exempt equipment:

Frequencies or Frequency Band Edges (MHz)	Maximum Radiated Level	Typical Channel Bandwidth	Notes	Reference Standard
13.553 - 13.567	60 dBµA/m at 10m		RFID	EN 300 330 EN 302 291
174.000 - 216.000	50 mW ERP	200 kHz	Use of the bands is on a tuning range basis.	EN 300 422
433.050 - 434.790	10 mW ERP	200 kHz		EN 300 440
470.000 - 694.000	50 mW ERP	200 kHz	Use of the bands is on a tuning range basis.	EN 300 422
823.000 - 826.000	20 mW EIRP	200 kHz		EN 300 422
823.000 - 826.000	100 mW EIRP	200 kHz	Restricted to body worn microphones	EN 300 422
826.000 - 832.000	25 mW ERP	200 kHz		EN 300 422
865.000 - 870.000	25 mW EIRP		Duty cycle ≤ 0.1% or LBT	EN 300 220
1880.00 - 1900.00	250 mW EIRP		DECT	EN 300 175
2400.00 - 2483.50	10 mW EIRP			EN 300 440

2400.00 - 2483.50	100 mW EIRP	20 MHz	RLAN Applications	EN 300 328
5150.00 - 5250.00	200 mW EIRP	40 MHz	RLAN Applications	EN 301 893
5250.00 - 5350.00	200 mW EIRP	40 MHz	RLAN Applications	EN 301 893
5470.00 - 5725.00	1000 mW EIRP	40 MHz	RLAN Applications	EN 301 893
5725.00 - 5875.00	25 mW EIRP	40 MHz	RLAN Applications	EN 300 440
5925.00 – 6425.00	200 mW EIRP	80 MHz	RLAN Applications	TR 103 524
24050.00 - 24250.00	100 mW EIRP			EN 302 372

7. Excluded / Restricted Bands

Introduction

7.1. The below table shows the list of frequency bands that are not permitted for use at AFC2023 venues since these bands are assigned exclusively for existing users in Qatar. However, some bands listed in the table are with limited availability as they are already allocated for other services.

No.	Frequency Range (MHz)	Allocation Purpose in Qatar	Assignment Availability
1	26.965 – 27.405	Citizen Band	Limited Availability
2	87.5 – 108	FM Plan	Unavailable
3	108 – 136	Aeronautical	Unavailable
4	144 – 146	Amateur	Unavailable
5	156 – 163	Maritime	Unavailable
6	380 – 400	Public TETRA Network	Unavailable
7	410 – 430	Public TETRA Network	Limited Availability
8	430 – 440	Amateur	Limited Availability on Non-Protection, Non-Interference and Non-Exclusive basis
9	440 – 450	Public Network	Unavailable
10	694 – 790	Public Network	Unavailable

11	790 – 862	Public Network	Unavailable
12	863 – 865	Assigned exclusively to SC in all stadiums for Assistive Listening System	Unavailable
13	876 – 925	Public Network	Unavailable
14	880 – 960	Public Network	Unavailable
15	960 – 1215	Aeronautical	Unavailable
16	1427 – 1518	IMT System	This band maybe considered for wireless/ video links.
17	1710 – 1880	Public Network	Unavailable
18	1920 – 2170	Public Network	Unavailable
19	2300 – 2400	Public Network	Unavailable
20	2500 – 2690	Public Network	Unavailable
21	3350 – 3400	Public Network	Unavailable
22	3400 – 3600	Public Network	Unavailable
23	3600 – 3800	Public Network	Unavailable
24	7900 – 8400	Fixed Applications	Limited Availability
25	10700 – 11700	Fixed Applications	Unavailable
26	12835 – 12947	Fixed Applications	Unavailable
27	13101 – 13213	Fixed Applications	Unavailable
28	14400 – 15350	Fixed Applications	Unavailable
29	17700 – 19700	Fixed Applications	Unavailable
30	24250 – 27500	IMT System	Unavailable
31	37000 – 43500	IMT System	This band maybe considered for assignment
32	66000 – 71000	IMT System	This band maybe considered for assignment

8. e-Spectrum Portal

Introduction

8.1. e-spectrum portal is an Automated Spectrum Management System which allows applicants to register (after receiving the invitation email from CRA to the eligible users) and then submit applications for different types of spectrum uses. All applicants are required to register on the e-spectrum portal before applying for any type of license category.

8.2. The portal supports submission of frequency license applications and registration of radio equipment under these licenses once they are issued.

8.3. The portal allows submission of all license-exempt equipment registration for different categories of usage.

8.4. All details on how to submit application through the e-spectrum portal are explained in Annex 3.

9. Spectrum Interference Monitoring

Introduction

10.1 During the event a variety of radio applications and a substantial number of radio equipment will be present and aggregated within a limited area, which pose a real challenge to meet all spectrum demands and ensure that communications can go ahead without interference.

10.2 Spectrum monitoring staff shall be present in the venues during the AFC2023 to perform monitoring, identification and resolution of any radio frequency interference detected or reported.

CRA Procedures

10.3 Each AFC2023 venue shall be monitored for evidence of radio frequency interference or unauthorized use of radio frequencies by CRA. Any interference detected shall be geo-located in order to locate the source. All interfering sources shall be removed from the venue or switched off until such interference has been resolved.

10.4 CRA will utilize 22 Fixed monitoring stations and 4 Mobile monitoring stations for spectrum monitoring and interference investigation during the AFC2023, in addition, dedicated Field teams with portable monitoring & direction-finding equipment will be present in each stadium during all

matches. National Spectrum Monitoring Center (NSMC) will serve as the central control center and will remain fully operational during the event.

10.5 CRA will execute spectrum usage monitoring and enforcement actions in the areas where activities related to AFC2023 will be held, in order to identify in advance possible cases of harmful interference with systems whose use is expected during the event and take preventive action. CRA with the competent public security entities shall curb and eliminate the improper / unauthorized use of frequency, identified during the event.

10.6 CRA has in place guidelines for interference management procedures by which it manages spectrum interferences for all its licensees. Any Spectrum Harmful interference complaints can be raised in the prescribed format available on CRA's website which guides the complainant to provide necessary information and relevant data for submission of the interference complaint through email to (interference@cra.gov.qa), for further investigation and resolution.

10.7 CRA will implement the Spectrum Monitoring activities in two phases, the below table depicts the phases and planned activities for all two phases:

Activity	Schedule	Monitoring Activity
Pre-Event Monitoring	10th – 31st December 2023	– Monitoring of all spectrum bands to verify availability of frequencies assigned for Event – Resolution for any interference affected frequency, in coordination with Planning.
	1st – 11th January 2024	– Monitoring surveys at Stadiums for verification of stadium specific frequencies. – Monitoring of satellite bands, specific to broadcast services and frequencies to be used at IBC – Testing & Rehearsal of all wireless communication / spectrum usage at official venues
Monitoring During Events	12th January – 10th February 2024	– Efficiently Identification and removal of any unauthorized use of spectrum – Interference investigation and resolution through well-coordinated procedures and actions.

Spectrum Monitoring Schedule for AFC2023

Annex 1

Annual Radio Spectrum License Fees for Terrestrial Radiocommunication Services

Spectrum Fee

	Annual Radio Spectrum License Fee for Terrestrial Radio Services (QAR per MHz per year) [9,11]				
	Mobile services, point to multipoint fixed links, scanning telemetry/SCADA systems, broadband wireless access and broadcast transmitters			Any frequency license with exclusive nation-wide use[7]	Individual fixed links, radars, beacons and navigation equipment[5,6]
Coverage	Small Area	Local Area	Large Area	National	
Coverage Area[1,2]	*A ≤ 5 sqkm*	*5 < A ≤500 sqkm*	*500<A≤2,000 sqkm*	*A > 2,000 sqkm*	
Max Coverage Radius [1,3]	*R ≤ 1 km*	*1 < R ≤ 12.5 km*	*12.5 < R ≤ 25 km*	*R > 25 km*	
Transmitter, ERP[4]	*ERP ≤ 1 W*	*1 < ERP ≤ 5 W*	*5 < ERP ≤ 25 W*	*ERP > 25 W*	
Frequency Range					
Frequency equal to or less than 87.5 MHz	8,320	16,640	24,960	49,920	8,320
Frequency higher than 87.5 and equal to or less than 108 MHz	16,666 (8,320)	33,333 (16,640)	50,000 (24,960)	100,000 (49,920)	16,666 (8,320)
Frequency higher than 108 and equal to or less than 470 MHz	8,320	16,640	24,960	49,920	8,320
Frequency higher than 470 and equal to or less than 694 MHz	4,160	8,320	12,480	24,960	4,160
Frequency higher than 694 and equal to or less than 960 MHz	16,666 (4,160)	33,333 (8,320)	50,000 (12,480)	100,000 (24,960)	16,666 (4,160)
Frequency higher than 960 and equal to or less than 1710 MHz	2,080	4,160	6,240	12,480	2,080
Frequency higher than 1710 and equal to or less than 2025 MHz	12,500 (2,080)	25,000 (4,160)	37,500 (6,240)	75,000 (12,480)	12,500 (2,080)
Frequency higher than 2025 and equal to or less than 2110 MHz	2,080	4,160	6,240	12,480	2,080
Frequency higher than 2110 and equal to or less than 2200 MHz	12,500 (2,080)	25,000 (4,160)	37,500 (6,240)	75,000 (12,480)	12,500 (2,080)
Frequency higher than 2200 and equal to or less than 2400 MHz	1,040	2,080	3,120	6,240	1,040
Frequency higher than 2400 and equal to or less than 2500 MHz[10]	130	260	390	780	130
Frequency higher than 2500 and equal to or less than 2690 MHz	6,667 (1,040)	13,333 (2,080)	20,000 (3,120)	40,000 (6,240)	6,667 (1,040)
Frequency higher than 2690 and equal to or less than 5150 MHz	1,040	2,080	3,120	6,240	1,040
Frequency higher than 5150 and equal to or less than 5350 MHz[10]	130	260	390	780	130/1,040[8]
Frequency higher than 5350 and equal to or less than 5470 MHz	1,040	2,080	3,120	6,240	1,040
Frequency higher than 5470 and equal or less than 5875 MHz[10]	130	260	390	780	130/1,040[8]
Frequency higher than 5875 and equal to or less than 10000 MHz	520	1,040	1,560	3,120	520
Frequency higher than 10 and equal to or less than 19.7 GHz	260	520	780	1,560	260
Frequency higher than 19.7 and equal to or less than 40 GHz	130	260	390	780	130
Frequency higher than 40	500	500	500	500	500

Rules of Application of the above Table

A1.1 The table shall be applied by taking into account the references (1-11) mentioned therein, as follows:

1. Applies to area and band-based licenses for PMR/TMR networks, cellular and FM broadcasting.
2. Applies to licenses where coverage is defined as a geographic area.
3. Applies to licenses where coverage is defined as a radius from a central point.
4. Applies to individually licensed aeronautical, maritime or PMR base stations.
5. For bidirectional fixed links, fees will take the bandwidth in both directions into account, i.e. a bidirectional fixed link with a 7 MHz assigned bandwidth will consist of two radio transmitters operating on different frequencies and both with a 7 MHz assigned bandwidth, thus the fee will be based on the combined assigned bandwidth of 14 MHz.
6. For fixed links, where two links are deployed along the same path using the same frequencies but with orthogonal polarization, the fee for the second link will be reduced by 50%.
7. Fees for point-to-point link block allocations will be set at the national coverage level.

8. The lower fee per MHz applies to non-protected fixed links operating in this frequency range.

9. The above table is not a statement of assignment policy, i.e. the presence of a fee in each cell does not indicate that a Radio Spectrum License can be obtained to operate any radio service in any frequency band.

10. All assignments in this band are granted on a shared and non-protected protected basis, this includes nation-wide assignments (i.e. nation-wide assignments are not exclusive to the licensee).

11. Numbers in brackets refer to annual spectrum fees per MHz that will apply in the event that the spectrum was awarded following an auction or similar competitive award process where the licensee has paid a market-based fee for the radio spectrum.

Annex 2

Annual Radio Spectrum License Fees for transmitting earth stations of the Fixed Satellite Service

Spectrum Fee

		Annual Radio Spectrum License Fee (QAR per MHz per year)				
	Satellite elevation angle (ε)	**ε ≥ 36°**				**ε < 36°**
	Interference Radius (R)	**R≤20 km**	**20<R≤30 km**	**30<R≤40 km**	**R > 40 km**	**N/A**
Frequency Range	Frequency higher than 5,2725 and less than or equal to 10 GHz	520	1,040	1,560	3,120	3,120
	Frequency higher than 10 and less than or equal to 12,5 GHz	260	520	780	1,560	1,560
	Frequency higher than 12,5 and less than or equal to 12,75 GHz	8	8	8	8	8
	Frequency higher than 12,75 and less than or equal to 17,3 GHz	260	520	780	1,560	1,560
	Frequency higher than 17,3 and less than or equal to 17,7 GHz	8	8	8	8	8
	Frequency higher than 17,7 and less than or equal to 19,7 GHz	260	520	780	1,560	1,560
	Frequency higher than 19,7 and less than or equal to 29,5 GHz	130	260	390	780	780
	Frequency higher than 29,5 and less than or equal to 29,9 GHz	4	4	4	4	4
	Frequency higher than 29,9 and less than or equal to 40 GHz	130	260	390	780	780

Rules of Application of the Table:

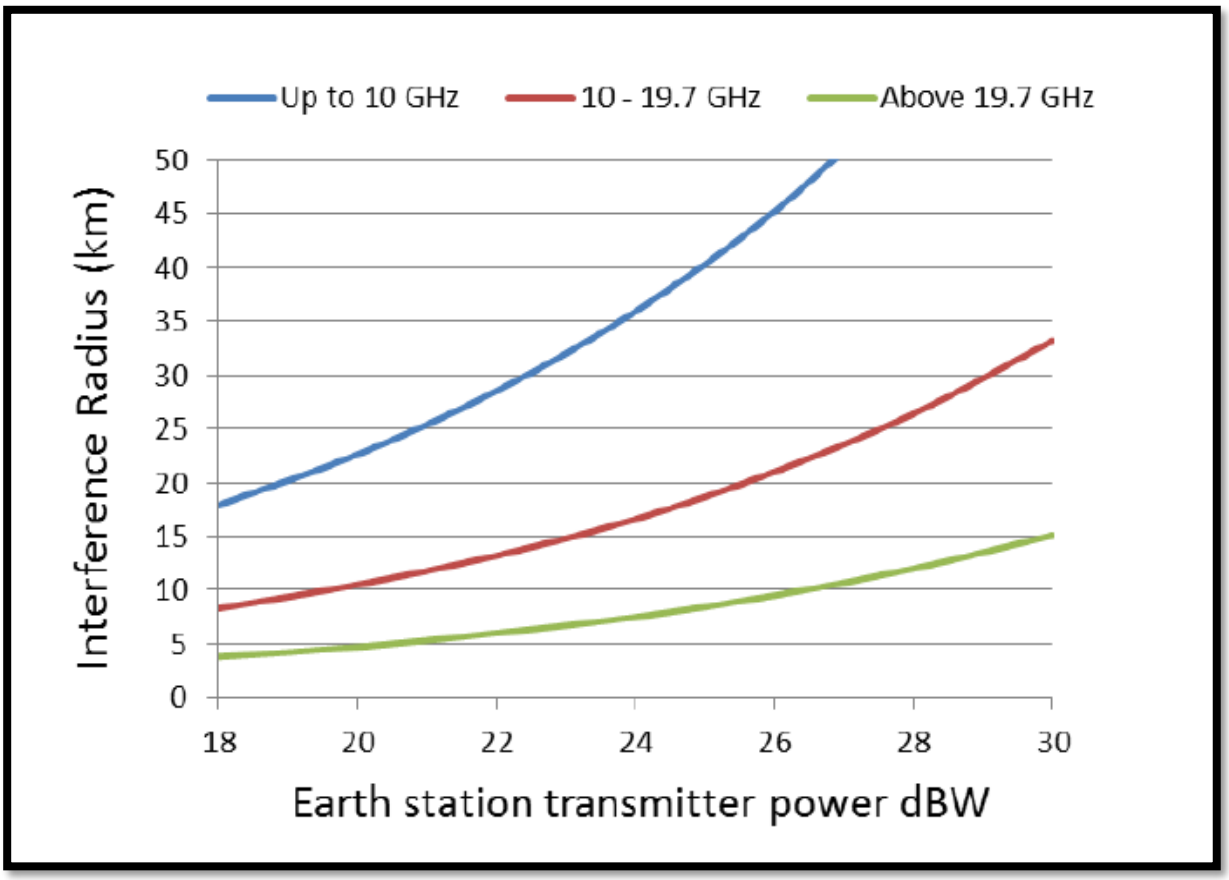
- Where two or more co-frequency earth stations operated by the same licensee are co-located (i.e. within 1 km of each other) and point to satellites at 36 degrees elevation or greater, these will be subject to a single fee based on the interference radius resulting from the aggregate transmitter power of the co-located stations. Where such earth stations are located more than 1 km apart, the applicable fee will be based on the interference radius corresponding to the aggregate transmitter power of the earth stations plus the maximum separation distance between the individual earth stations.

- In all cases the fee per operator will not exceed that associated with an interference radius of R < 40 km.

- However, if the sum of the costs of all assignments is less than QAR 500, then a minimum fee of QAR 500 is applied as the annual Radio Spectrum License Fee.

- In order to derive the interference radius and coverage factor as a function of frequency band and earth station transmitter power, the chart hereunder shall be used.

- Receive only devices and radio transmitters that are covered by Class Licenses will not be subject to Radio Spectrum Fees.



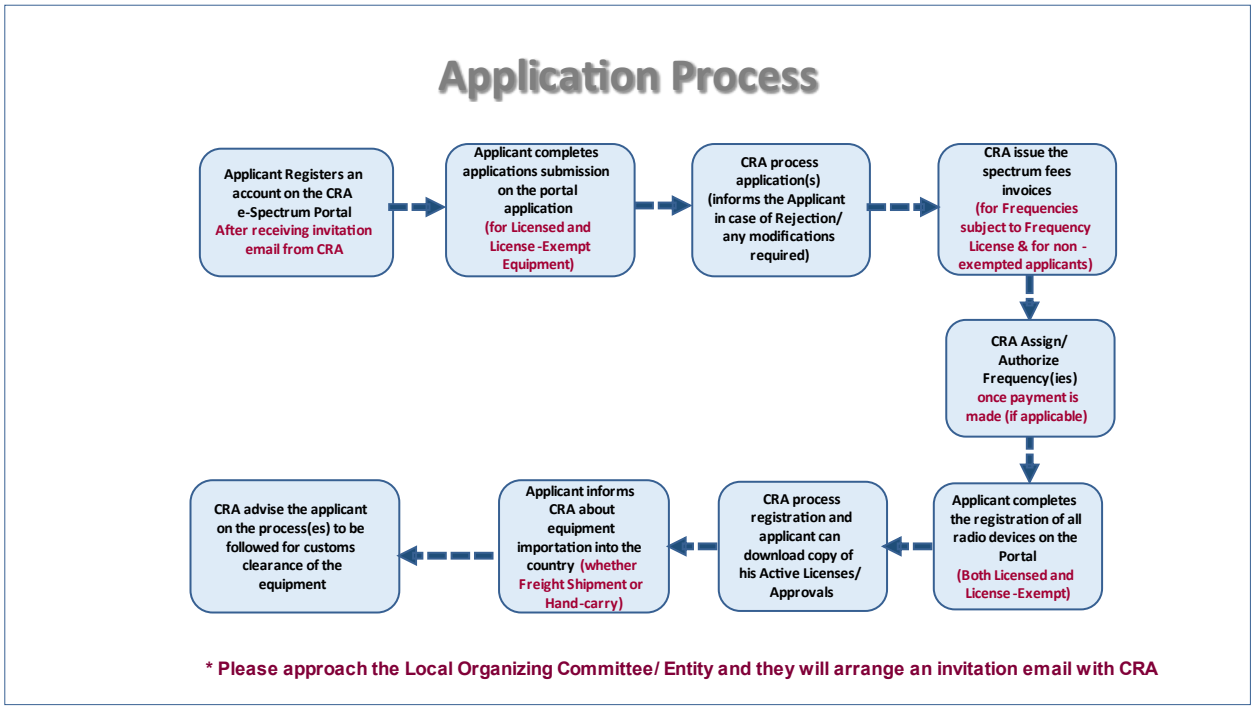
Annex 3

SPECTRUM APPLICATION PROCESS

CRA is the responsible authority for regulating and managing all the affairs related to the use of the radio spectrum in Qatar.

All entities like service providers, media and broadcasting organizations located inside or outside the state of Qatar, who need to use radio equipment within event venues, must register the equipment through the spectrum portal and obtain the necessary permits/ licenses from CRA.

The below diagram shows the application process for radio equipment intended to be used during special events.



Please take the following points into consideration:

- CRA has created a separate page (portal) for spectrum applications and this page can be accessed by eligible users after receiving the invitation email from CRA.
- Once account is created on the event spectrum applications portal, the user can start filling the necessary

applications for:

- Frequency Licenses (e.g. PMSE Area, Transportable Earth Station,..)
    - Equipment Registration [for license-exempt equipment this application to be submitted direct, while for equipment subject to frequency license this application can be submitted only after the issuance of the relevant frequency license(s)]
    - Download the processed frequency licenses (after payment if applicable)/ active authorizations (for radio equipment)
- If applicable, fees for the use of radio spectrum will be calculated and invoices will be generated so the applicant shall pay the fees before CRA issues the licenses, payment can be made either:
    - Online (on the portal), or
    - Offline (bank transfer to CRA bank account mentioned in the invoice), or
    - Offline (through Cash deposit at any of QNB bank branches), or
    - PoS (Point of Sale) terminals available at CRA premises.
- In case the equipment to be registered on the portal is not available in the equipment library, then applicant may contact CRA to arrange updating the equipment database.
- Applicants may contact CRA via spectrumaffairs@cra.gov.qa
- Applicants are advised to keep CRA informed as soon they have information on their equipment importation (whether freight shipments or hand-carry).