

# **Consultation on Qatar Radio Spectrum Outlook 2022**

## **SUMMARY OF COMMENTS AND RESPONSE OF CRA**

## **Background**

On 21st January 2020, CRA published Qatar Radio Spectrum Outlook 2022 – A Consultation Document, that addressed its spectrum management priorities through its three-year spectrum outlook.

Qatar Radio Spectrum Outlook 2022 Consultation Document set out CRA's overview on spectrum management activities and projects, including update of the national frequency allocation plan, review of the spectrum usage fees, prepare a mechanism for QoS mobile networks audit as well as highlight the strategic spectrum projects that are expected to be completed before 2022.

In keeping with preceding practices and other matters concerning the radio spectrum of Qatar, and in the interest of providing a transparent and predictable approach to spectrum management, CRA invited interested stakeholders to comment about the Radio Spectrum Outlook for the coming three-years. Additionally, interested parties were invited to express their general views as well as their concerns on the Outlook.

Qatar Radio Spectrum Outlook 2022 Consultation Document is available on CRA's website at [www.cra.gov.qa](http://www.cra.gov.qa).

This document captures the main responses submitted by interested parties and provides CRA's answers and views. The views, comments or opinions herein are not legally binding on any party.

## **Comments Submitted**

CRA requested written comments about Qatar Radio Spectrum Outlook 2022 Consultation Document from interested parties. CRA considers "interested parties" to be any individual, company or organization with an interest in the subject at hand and the development of Qatar's telecommunications sector.

Comments were received from:

1. (3) Responses received from Government and Security Agencies
2. Ooredoo Qatar (Q.S.C)
3. Vodafone Qatar
4. Qatar Satellite Company (Es'hailSat)
5. Association of Professional Wireless Production Technologies (APWPT)
6. Intel Corporation
7. Intelsat
8. Iridium
9. ViaSat

10. EMEA Satellite Operators Association (ESOA)

11. Huawei

12. Motorola Solutions

13. Itron

14. Qatar International First for Electro-Mechanical Company

CRA wishes to thank all of the above parties for their comments. We view participation and all comments to be a valuable part of the consultation process.

CRA allows contributors to seek confidentiality when submitting information, but publication shall be entirely at the discretion of CRA. Non-confidential versions of submissions and those deemed by CRA to be lacking commercially sensitive information will be made available on CRA's website.

CRA is publishing this summary of the major issues that were raised in response to Qatar Radio Spectrum Outlook 2022 Consultation Document. Included in this is a precis of CRA's views in relation to the comments.

## Summary of Comments and Response of CRA

### Section I

#### General Comments

This section includes a summary of the general comments received from the Industry on the consultation document along with the CRA feedback.

<b>General Comments</b>
Support that CRA will be guided by principles that promote economic and social benefits, provide a transparent and predictable approach to spectrum management and ensure the most efficient use of radio spectrum in accordance with international best practices in order to develop its new spectrum plan. <b>Q:</b> CRA to explain how each of these principles has been applied?
<b>CRA Response:</b>
CRA has engaged the SP's in discussions related to spectrum management activities. CRA considers inputs from all relevant stakeholders during technical evaluation for any type of application that benefits the country as well as the consumers. CRA prioritizes efficient use of spectrum as a major factor before it grants any frequency authorizations. Frequency efficiency exercises have been implemented for a while now between CRA and the stakeholders. CRA will continue engaging stakeholders in any activities related to spectrum management to ensure transparency.

<b>General Comments</b>
The proposed plan may be too ambitious for the time frame (a lot of work to be done under the plan, which may not be possible considering the plan is only for 3 years). The resources of the CRA both financial and human may not be adequate to meet targets.
<b>CRA Response:</b>
CRA believes that the Plan was thoroughly evaluated and discussed. CRA believes that all programs can be achieved within the time frame. CRA will be working on enhancing the resources as appropriate.

<b>General Comments</b>
It is recommended that the CRA adopt a more streamlined approach that focuses primarily on top spectrum priorities: <ul style="list-style-type: none"><li>- NFAP, 5G Band Plan.</li><li>- Streamline the spectrum licensing process.</li><li>- Harmonize spectrum for IoT.</li><li>- Establish public awareness programs re Emission Spectrum Monitoring.</li></ul>

**CRA Response:**

CRA believes that all suggested programs have been taken into consideration. Some programs are considered as ongoing activities and can be discussed with the Stakeholders as and when needed.

**General Comments**

It was noted that the CRA's proposed work plans do not include public (consumers and businesses) outreach and awareness. This is a gap as public in Qatar are concerned about the safety of radio apparatus and mobile services.

**CRA Response:**

CRA considers the public awareness as one of its key responsibilities. Events and programs are planned frequently in this regard to address any concern.

**General Comments**

Appreciates CRA's efforts. Broadly agree with the proposals set out in the Spectrum Outlook. Furthermore, also look forward to the planned consultations and engagements with the CRA once the Spectrum Outlook is finalized.

**CRA Response:**

Thanks for the comment. Noted.

**General Comments**

Believe that as the CRA consultation is open for public to comment, apart from current mobile licensees, there are other stakeholders interested in or affected by spectrum matters including other NRAs, vendors, equipment manufacturers, enterprise, government entities, industry associations, international SPs/organizations and members of the public or consumers which may provide submissions. Based on the above-mentioned level of interest, it is recommended that the CRA publish all submissions made by all interested parties and also publish the final Spectrum Outlook as a reference point in the region.

**CRA Response:**

Thanks for the comment. Noted.

**General Comments**

Agrees with the CRA's statement that spectrum is a finite and valuable resource of the country. As such, clear visibility on spectrum assignments is essential for the CRA as the regulator and for stakeholders as actual/ potential spectrum users. Believe that they have a good understanding of the current mobile and microwave bands. However, there is still limited information publicly available regarding the allocation of certain spectrum bands. It is recommended that the CRA make available additional information pertaining to the spectrum allocation and availability database of the country. This will assist potential spectrum users and promote efficient use and allocation of spectrum.

**CRA Response:**

CRA considers some information as classified and cannot be made publicly available.

**General Comments**

No major concerns pertaining to the CRA considerations on prioritization of activities of the work plan. It is recommended that the implementation of each activity be consulted upon with relevant stakeholders.

**CRA Response:**

CRA will ensure engaging major stakeholders in the discussion of the work plan.

**General Comments**

Believe there are other factors that could affect the spectrum work plan and activities. For instance, the current draft QoS Regulation is proposing SPs to conduct quarterly drive and field test measurements for mobile and fixed network KPIs. They strongly object to this proposal because it will have a detrimental impact not only on SPs, but also on CRA in terms of its resourcing capability and priority, demanding significant efforts to review SPs measurement and results which ultimately will not be fit for purpose comparisons.

**CRA Response:**

CRA believes that this subject will be discussed thoroughly outside this document as appropriate.

**General Comments**

Commend the CRA for efforts to accelerate the high-speed, high-quality wireless broadband in QATAR aligned with the objectives of National Vision 2030 and success of FIFA World Cup 2022. Global broadband objectives are the same as that of most governments and consumers: to enable high-speed and high-quality, widespread, affordable broadband in all countries extending computing technology to connect and enrich the lives of every person on earth. Strongly encourage all administrations to establish technology and service neutral policies, expeditiously assign spectrum, and permit compliance to globally recognized standards.

**CRA Response:**

Thanks for the comment. Noted.

**General Comments**

Believe that spectrum Outlook is very important for the new emerging technologies 5G, AI, IoT, Wi-Fi6. Wi-Fi brings the greatest impact to the economy in four key categories: developing alternative technologies to expand consumer choice, creating innovative business models to deliver unique services, expanding access to communications services for fixed and mobile networks, and complementing wireline and cellular technologies to enhance their effectiveness. Qatar should benefit from this new technology by facilitating license-exempt access to the 6 GHz band (5925 - 7125 MHz) to realize the full potential of next generation Wi-Fi 6.

**CRA Response:**

CRA has already initiated the discussions with the stakeholders, other regulators in the region as well as with the industry to explore the best decision to be taken in this regard.

**General Comments**

Commend the CRA on adopting guiding principles aligned with the Radio Spectrum Policy of the CRA and international best practice. We believe that a transparent and predictable approach to spectrum management and market access is conducive to the creation of a business environment that attracts investment and enables services that benefit communities/users.

**CRA Response:**

Thanks for the comment. Noted.

## Section 2

### National Frequency Allocation Plan

This section includes a summary of the comments received from the Industry on the national frequency allocation plan along with the CRA feedback.

#### National Frequency Allocation Plan

The updating of NFP should also take into account the new frequency allocations to satellite services made by the WRC-19.

#### **CRA Response:**

CRA will conduct a public consultation on the updated version of the NFAP and will take into consideration the outcomes of the WRC-19.

#### National Frequency Allocation Plan

Commends the CRA on its intention to provide stakeholders with an overview of spectrum management opportunities, including updates to the national frequency allocation plan. We believe that transparency and stakeholder engagement will have an important contribution to the decision-making process. Invite the CRA to expand the scope of its planned consultation to include the participation of all interested stakeholders.

#### **CRA Response:**

CRA considers the importance of engaging all interested parties in the NFAP process cycle. Public consultation will be considered in this regard.

#### National Frequency Allocation Plan

We emphasize the importance of protecting and providing room for growth to meet demand for critical satellite broadband spectrum within the updated NFAP.

#### **CRA Response:**

CRA will consider this view while updating the NFAP.

#### National Frequency Allocation Plan



Consider the inclusion of Satellite Solutions for 5G as a service in the 5G ecosystem.

**CRA Response:**

CRA will take into consideration this comment while updating the NFAP.

**National Frequency Allocation Plan**

Encourage the CRA to release the draft for public consultation and allow vendor community and industry the opportunity to provide comments before the document is finalized and published.

**CRA Response:**

CRA will adopt public consultation approach for the NFAP to give the opportunity to all concerned and interested parties to provide comments.

**National Frequency Allocation Plan**

Encourages the CRA to consult publicly with domestic and international stakeholders on the proposed changes to the NFAP.

**CRA Response:**

CRA will adopt public consultation approach for the NFAP to give the opportunity to all concerned and interested parties to provide comments.

**National Frequency Allocation Plan**

Welcomes the CRA's approach of getting prepared for the future especially the FIFA World Cup 2022 and its vast needs for comprehensive reporting and communication. In the light of the coming FIFA World Cup the first crucial step must be to revise the national frequency allocation table that needs to be made public for all interested parties and provide them with an opportunity to comment.

**CRA Response:**

CRA will adopt public consultation approach for the NFAP to give the opportunity to all concerned and interested parties to provide comments.

**National Frequency Allocation Plan**

2.3 GHz to be enrolled under Mobile Service Spectrum.

**CRA Response:**

CRA will take this suggestion into account while updating the NFAP.

**Section 3**  
**Spectrum Pricing**

This section includes a summary of the comments received from the Industry on spectrum pricing along with the CRA feedback.

<b>Spectrum Pricing</b>
Regulators worldwide are reviewing spectrum plans and radio regulations with the objective of introducing pro-investment policies to support 5G. It is recognized that 5G is a catalyst for future economic growth, which requires significant investment for equipment, spectrum and other regulatory costs. Encourage and recommend that the CRA adopt spectrum-pricing policies that serve as enablers to the rollout of 5G networks in lieu of pricing policies that may impede investment and/or raise the prices of 5G services to customers.
<b>CRA Response:</b>
CRA will take this view into account during the review process.

<b>Spectrum Pricing</b>
Believe that Qatar does not have a scarcity of radio spectrum today. There are only two mobile service providers, though government also has significant spectrum requirements. Considering that there is no obvious scarcity, there is no economic basis to increase the cost of spectrum licenses as a means to promote efficient use at this time. Suggest that keeping the prices of spectrum down also helps service providers to price new services at more affordable rates.
<b>CRA Response:</b>
CRA will take this view into account during the review process.

<b>Spectrum Pricing</b>
The consultation and review of the spectrum fee structure to be postponed to after the 2022 World Cup in order to allow the CRA and the industry to focus on facilitating the deployment of infrastructure and enhancing network performance to meet FIFA requirements.
<b>CRA Response:</b>

The concern is noted and would be considered during the review process.

### Spectrum Pricing

The date of enforcement of the new spectrum fees schedule should be from the Year 2022 because the Cabinet's approval for the new fee schedule is projected to be in June 2021, whereas, all the budget allocations for the required spectrum licenses would have already been made as per the existing spectrum fees schedule. It will cause complexities / difficulties for the Licensees to arrange additional funds in the middle of the financial year.

#### **CRA Response:**

The concern is noted and would be considered during the review process.

### Spectrum Pricing

Interested in participating in the Q4 2020 public consultation on spectrum fees and is interested in collaborating with the CRA to that regard.

#### **CRA Response:**

Thanks for interest. CRA will make sure to involve the industry in this process.

### Spectrum Pricing

Encourages the CRA to consult publicly with domestic and international stakeholders on the proposed changes to Spectrum Fees.

#### **CRA Response:**

CRA will ensure involvement of the industry in this process.

### Spectrum Pricing

Invite CRA to secure reasonable spectrum fees for both mobile and microwave spectrum. High prices for spectrum depress operators' incentive to invest and compete, resulting in lower quality and higher prices for consumers. Encourage the CRA to consider a model similar to that of Germany, which divides the mobile spectrum in the C-Band between carriers where 100MHz was reserved for local and private licenses and with distinct pricing for spectrum to carriers and incentive pricing for private users.

**CRA Response:**

CRA notes the suggestion and it would be considered during the reviewing process.

**Spectrum Pricing**

Licensing fees should not be used as a source of profit for the government. Some administrations do not charge for spectrum licenses, especially in bands that are exclusively allocated to satellite services and where a blanket-licensing regime is used.

**CRA Response:**

CRA notes the concern.

## Section 4

### Spectrum Licensing

This section includes a summary of the comments received from the Industry on spectrum licensing along with the CRA feedback.

<b>Spectrum Licensing</b>
Believe that mobile operators need access to sufficient international, harmonized spectrum and that an effective licensing policy plays a key role in providing such access.
<b>CRA Response:</b>
CRA believes that the Spectrum Licensing Regulatory Framework was consulted and discussed thoroughly with all stakeholders and all concerns would be taken into consideration in any further review of the framework.

<b>Spectrum Licensing</b>
Agree that a transparent plan is vital as a means to provide certainty to industry that spectrum will be available as needed at pro-investment prices.
<b>CRA Response:</b>
Thanks for the comment. Noted.

## Section 5

### 4G and 5G Frequency Bands

This section includes a summary of the comments received from the Industry on 4G and 5G frequency bands along with the CRA feedback.

<b>4G and 5G Frequency Bands</b>
5G coverage and connectivity goals should be reached in time for FIFA 2022 and should be available in a timely manner at economic prices. Argue that publishing the list of band assignments for 5G mobile services should be the first work program under the new spectrum plan, which should run in parallel with the updating of the NFAP.
<b>CRA Response:</b>
CRA published the band plan for 5G early in 2018 after consultation with the stakeholders. CRA was one of the first regulator in the region to publish the said plan. CRA believes that an agreement was achieved with the SP's on the 5G assignments. However, CRA welcomes any discussion with the SPs in this regard.

<b>4G and 5G Frequency Bands</b>
2.6 GHz Spectrum is critical for SPs to continue using and deploying FDD for LTE (and potentially 5G) without any imposed requirement for TDD re-farming. This is necessary to avoid unintended consequences on performance and investment.
<b>CRA Response:</b>
CRA believes that the matter should be discussed carefully with the stakeholders. The deployment of the TDD in the neighboring countries should be taken into consideration for best use of the spectrum.

<b>4G and 5G Frequency Bands</b>
Operational and Licensed FSS links in the 26 GHz frequency band. Protection of the incumbent FSS links should be ensured while allocating spectrum for 5G services in this frequency band.
<b>CRA Response:</b>
CRA considers the outcomes of ITU recommendations and reports with respect to the protection of incumbent services while allocating and assigning any new frequency for any new services.

### General Comments

Recommend focusing on the most efficient use of spectrum according to need and benefits of new emerging technologies (5G and Wi-Fi 6). Qatar should be able to get maximum economic and social benefits from the future spectrum plan aligned with the objectives of Qatar's Visions.

#### **CRA Response:**

CRA is involved in national and regional discussions on this matter to explore harmonization and best use of the spectrum.

### 4G and 5G Frequency Bands

Encourage CRA initiative to allocate additional spectrum to MNOs in 900/1800/2100 MHz bands ideally in a contiguous (non-fragmented) manner to ensure the best usage and flexibility to operators.

#### **CRA Response:**

CRA will take into consideration this suggestion while discussing the said bands with the SP's.

### 4G and 5G Frequency Bands

Invite CRA to consider technology and service neutral authorizations as this is important to maximize spectrum potential and offer operators necessary flexibility in deploying the relevant technologies for relevant use cases.

#### **CRA Response:**

CRA considers technology neutrality in the service licenses issued to the SP's.

### 4G and 5G Frequency Bands

Believe that it is timely that the 1427 – 1518 MHz L-band should be considered in the IMT frequency bands for release for 5G.

#### **CRA Response:**

CRA will consider this view in the updated NFAP. However, CRA favors seeing this band mature enough to make the spectrum more attractive for the concerned parties.



#### 4G and 5G Frequency Bands

To accelerate 5G deployment assign more frequencies for 5G in Low, Mid and High bands (e.g. 600 MHz, 2.3 - 2.6 GHz, 3.0 – 5.0 GHz and 25.0 – 45.0 GHz). Utilize spectrum sharing mechanisms and Wi-Fi co-existence with SPs.

#### **CRA Response:**

CRA assigns spectrum for the SP's based on the demand and the availability of the ecosystems.

#### 4G and 5G Frequency Bands

The application IMT (land mobile service) tends to overstate their demands for new spectrum, many times without any clear evidence that IMT will keep its promises at any time. It should not be assumed that new technologies that IMT showcases actually deliver what IMT promises. To cope with the envisioned growth of mobile services it would in many cases be much better that IMT providers migrate old technologies to state-of-the-art ones. This migration will, as statements of the mobile industry confirm, be much more efficient than old or outdated equipment and devices.

#### **CRA Response:**

CRA agrees the need to phase out old technologies for the efficient use of the spectrum.

#### 4G and 5G Frequency Bands

Encourage CRA to pave the way for longer term future IMT usage and identification in the UHF range 470-694 MHz (WRC 23 A11.5) and in the 6425-7125 MHz range (WRC 23 A1 1.2) while reviewing its current use or planning future use of other services such as satellite or broadcasting. Future IMT evolutions traffic and coverage requirements will continue to grow.

#### **CRA Response:**

CRA will follow the agenda items of the WRC-23 to ensure that the proposed options will fulfill the requirements of the country in the said bands.

#### 4G and 5G Frequency Bands

Wireless cameras can be served by MNOs through 5G spectrum and MNOs authorizations. Such models would reduce the fragmentation of spectrum. 5G broadcast solutions is an advanced PMSE that enables multi-view live broadcast and 4K experience.

**CRA Response:**

CRA will discuss this view with the SP's and explore their interest.

**4G and 5G Frequency Bands**

Out-of-Band-Emissions (“OOBE”) concerns from 5G/IMT.

**CRA Response:**

CRA contemplates protection of the incumbent services while allocating or assigning spectrum for any new services.

## Section 6

### Temporary spectrum Assignment

This section includes a summary of the comments received from the Industry on temporary spectrum assignment along with the CRA feedback.

<b>Temporary spectrum Assignment</b>
Welcome CRA's position to extend the temporary assignment of spectrum for mobile service for another 5 years in line with the CRA Strategy for 2020-2024.
<b>CRA Response:</b>
CRA will discuss the matter further with the SP's and consider the request, keeping in view the national interest and compliance with the Applicable Regulatory Framework.

## Section 7 Satellite Service

This section includes a summary of the comments received from the Industry on satellite service along with the CRA feedback.

<b>Satellite Service</b>
10.7 – 11.7 GHz band is a critical frequency band for satellite. Therefore, this frequency band should not at all be considered for IMT identifications or any other new services.
<b>CRA Response:</b>
CRA will take this view into consideration while reviewing the agenda items for the WRC-23.

<b>Satellite Service</b>
The band 3.8 – 4.2 GHz is an important satellite band with a huge number of terminals already deployed and in service. Protection of incumbent services should be ensured.
<b>CRA Response:</b>
CRA considers the said band for satellite service especially for VSAT terminals and would carry on the discussion with the stakeholders to ensure the best interests in the band are catered for.

<b>Satellite Service</b>
Industry to be part of the review of the regulatory framework of Earth Stations in Motion (ESIM).
<b>CRA Response:</b>
CRA welcomes any contribution from the industry in any regulatory instrument to be issued by CRA in the future.

<b>Satellite Service</b>
Emphasizes the importance of protecting critical satellite spectrum, with emphasis on the 28 GHz and 18 GHz in future World Radio Conferences. This will assist countries, including Qatar in meeting long-term broadband requirements.

**CRA Response:**

CRA will take this view into consideration while reviewing the agenda items for the WRC-23.

**Satellite Service**

Satellite broadband services should be considered as a standalone program rather than under the 'other services' program of Qatar Spectrum Outlook 2022. This will adequately reflect the CRA's intention to be technology neutral as well as the potential benefits of satellite for the people of Qatar.

**CRA Response:**

Thanks for the comment. Noted.

**Satellite Service**

Wish to highlight the outcome of the WRC-19, and the international harmonization of radio spectrum to safeguard and protect incumbent services that might be impacted by decisions adopted by the CRA.

**CRA Response:**

CRA will consider the protection of incumbent services while allocating or assigning spectrum for any new services.

**Satellite Service**

It is essential to take into account the ever-changing requirements of the satellite industry, such as the growing demand for High Throughput Satellites (HTS) to connect fixed satellite earth stations and satellite earth stations in motion (ESIM) that provide broadband services anywhere at any time, particularly for the aeronautical and maritime sectors.

**CRA Response:**

CRA will take this view into account.

**Satellite Service**

CRA to appreciate the commercial and operational requirements of satellite industry and its important role in the 5G ecosystem. This approach will help the CRA outline its plans by enabling new technologies

to contribute with innovative services (such as in-flight connectivity, connectivity to vessels, connected land vehicles, high-capacity backhaul to telecoms operators or direct connectivity to end-users everywhere) and make the necessary spectrum resources available to support continuous deployment and growth of these services.

**CRA Response:**

CRA recognizes the need of the spectrum availability to support deployment of new innovative services, keeping in view the compliance to the Applicable Regulatory Framework.

**Satellite Service**

CRA should reflect in its work plan the Agenda Items for WRC-23 that are not necessarily related just to terrestrial mobile services.

**CRA Response:**

CRA considers all agenda items for WRC-23 as important. CRA will ensure to contribute equally to the ITU on the items related to any service, as appropriate, to safeguard the interest of the country.

**Satellite Service**

Better to see the satellite services aspect as a stand-alone program. Believe satellite services should be treated equally with terrestrial services.

**CRA Response:**

Thanks for the comment. Noted.

**Satellite Service**

CRA must pay careful attention to the protection needs of FSS systems to ensure that no harmful interference is caused to satellite earth stations by the deployment of 5G/IMT stations in portions of the C-band.

**CRA Response:**

Thanks for the comment. Noted.

### Satellite Service

The 27.5-29.5 GHz band (so-called “28 GHz”) is *not* internationally harmonized for 5G mobile services. It would be particularly inappropriate to look at allocating the 28 GHz band for IMT systems, since this spectrum is already largely in use for satellite services around the world for delivering broadband communications.

#### **CRA Response:**

CRA doesn't consider the 28 GHz band for IMT systems. The said band is heavily used by satellite operators and CRA appreciates the need for this band for satellite operation.

### Satellite Service

It is possible to fully accommodate IMT spectrum needs without raising critical constraints and risks for the growth and contribution of satellite sector to the future 5G eco-system in Qatar and the Middle East region.

#### **CRA Response:**

Thanks for the comment. Noted.

### Satellite Service

Mitigation and Protection plan for C-band FSS (DL: 3600 - 4200 MHz) and (UL: 5925 - 6425 MHz) from 5G/IMT deployments and Spectrum usage.

#### **CRA Response:**

CRA will take this view into consideration while assigning the spectrum to the SP's. However, it is to be understood that the 3400 – 3800 MHz frequency band is identified for IMT systems in Qatar.

### Satellite Service

The 10.7-11.7 GHz band is extensively used throughout the Middle East and Africa for broadcast feeds and to provide DTH satellite services to millions of households across. If the number of existing satellite terminals in this band is combined with the projected increase of users for the 2022 FIFA World Cup™, this number would underscore the magnitude and importance of this frequency band for satellite services in the Middle East.

#### **CRA Response:**

CRA will take this view into consideration while reviewing the agenda items for the WRC-23.

#### Satellite Service

Since Qatar is a major hub within the region for commercial maritime and air traffic, ESIM should be of great interest to the CRA. By opening up the already existing allocation to the FSS in the 12.75-13.25 GHz band for aeronautical earth station in motion (A-ESIM) use, the CRA would allow the increased availability of Ku-band spectrum for in-flight connectivity services to airlines and the corresponding increase in connectivity to consumers and passengers on such aircraft.

#### **CRA Response:**

CRA will take this suggestion into account while updating the NFAP.

#### Satellite Service

Protection to incumbent FSS links in 26GHz. Protection of 28GHz for Satellite service.

#### **CRA Response:**

CRA contemplates protection of incumbent services while allocating or assigning spectrum for any new services.

#### Satellite Service

Spectrum, Satellite orbits and numbering resources to be protected on GSO and Non-GSO.

#### **CRA Response:**

CRA contemplates protection of incumbent services while allocating or assigning spectrum for any new services.

#### Satellite Service

Commend the CRA's intention to eliminate any unauthorized transmissions interfering with satellite communications in Ku and Ka band in Qatar. Emphasize the importance of protecting those spectrum allocations for satellite services.



**CRA Response:**

CRA contemplates protection of incumbent services while allocating or assigning spectrum for any new services.

**Satellite Service**

CRA to focus on technical and regulatory framework for the use of Non-GSO ESIM in Ka-Band to be studied during the WRC-23 study cycle. ESIM communicating with GSO satellite networks and NGSO satellite systems in Ku-band and Ka-band, respectively.

**CRA Response:**

CRA will follow the related agenda items for WRC-23 to safeguard the interest of the country.

**Satellite Service**

The CRA should carefully study co-channel and adjacent channel interference caused by the potential deployment of 5G/IMT systems in the 3600-3800 MHz band into FSS geostationary satellite networks operating in the 3600-4200 MHz band on in the 3800-4200 MHz band.

**CRA Response:**

CRA contemplates protection of incumbent services while allocating or assigning spectrum for any new services.

## Section 8

### Quality of Service

This section includes a summary of the comments received from the Industry on quality of service along with the CRA feedback.

<b>Quality of Service</b>
Do not agree that CRA QoS obligations and coverage obligations for 5G is a priority for Qatar. Believe that there is no doubt that Qatar's service providers desire to be world leaders in the delivery of 5G mobile services and will showcase Qatar's advanced telecommunications services for the entire world to see at FIFA 2022. Believe the rationale for the CRA to expend critical resources as a means to enforce this already planned outcome is missing.
<b>CRA Response:</b>
CRA will continue the discussions with the SP's on the 5G QoS obligations as per the Applicable Regulatory Framework. CRA will ensure Qatar's leadership in the deployment and delivery of 5G services.

<b>Quality of Service</b>
Support CRA's work plan on annual QoS audit conducted by the CRA as a neutral and independent body making measurements. Consistent with this position, disagree with the proposed requirement for SP's to conduct quarterly measurement via drive test included in the Draft QoS Regulation published by the CRA for consultation on 5 January 2010. Such measurements will lead to inefficient duplication of work and inconsistent results. For the upcoming 2020 QoS audit, agree that the audit should include 4G/LTE coverage and submit that SPs should be able to use the results to certify compliance with their 4G/LTE coverage obligations, which have a completion deadline of 31 December 2020.
<b>CRA Response:</b>
CRA believes that the draft QoS regulations is out of the scope of the radio spectrum outlook and will be discussed outside this document as appropriate.

<b>Quality of Service</b>
No need to prioritize 5G Quality of Service Obligations as Service Providers by default had it in plan for 2022.
<b>CRA Response:</b>

CRA will continue the discussions with the SP's on the 5G QoS obligations as per the Applicable Regulatory Framework.

### Quality of Service

International benchmark references are not available for 5G QoS. Better to keep the industry decide how it will develop.

#### **CRA Response:**

CRA will continue the discussions with the SP's on the 5G QoS obligations as per the Applicable Regulatory Framework

### Quality of Service

Only CRA's Annual QoS Audit to be considered for compliance. Waiver the mandatory quarterly QoS by SPs.

#### **CRA Response:**

CRA believes that the draft QoS regulations is out of the scope of the radio spectrum outlook and will be discussed outside this document as appropriate.

### Quality of Service

2020 QoS Audit to be conducted on Q4 2020, requesting early methodology discussion.

#### **CRA Response:**

CRA will ensure involvement of the SP's in any discussion before initiation of any program.

### Quality of Service

Instead of pursuing the obligation, CRA should focus on making needed spectrum available.

#### **CRA Response:**

CRA takes into account the spectrum demand from all sectors in the country and supports the requirements to achieve the targeted goals.

### Quality of Service

Substantial amount of the 5G traffic growth may be offloaded on to Wi-Fi networks (and future WiGig networks), thus substantially reducing mobile spectrum requirements. The 66 and 81 GHz band in the “high” mm Wave bands notably should yield about 15 GHz of spectrum in contiguous blocks of at least 5 GHz, which could support very wide-band carriers.

### CRA Response:

CRA will take this suggestion into consideration and discuss it with the relevant parties.

### Quality of Service

CRA to study 3G/4G/5G traffic capping effect on offload and usage trend.

### CRA Response:

Thanks for the comment. Noted.

### Quality of Service

Monitor the Mobile activity and traffic offload to other data services (Wi-Fi).

### CRA Response:

Thanks for the comment. Noted.

### Quality of Service

The CRA should conduct an audit of terrestrial data usage in Qatar during the upcoming 2022 FIFA World Cup™ to better understand how much mobile data is off loaded (e.g., exabytes/month) to fixed networks, such as WIFI, during this event.

### CRA Response:

CRA will take this suggestion into consideration with the relevant parties.

## Section 9

### IoT

This section includes a summary of the comments received from the Industry on IoT along with the CRA feedback.

<b>IOT</b>
State that the GSMA predicts that the number of IoT connections will reach 25 billion by 2025. Considering the target is only 5 years away and already in progress, CRA's new spectrum plan must prioritize international spectrum harmonization as a means to support the rollout of IoT technologies in Qatar and to be able to participate with new services and opportunities for Qatar businesses in this strong trend.
<b>CRA Response:</b>
CRA believe that IoT is one initiative of its Strategy 2020-2024 and all aspects (including spectrum) will be taken into account while developing the regulatory instrument for the IoT.

<b>IOT</b>
Suggest that the CRA add innovation as a factor to influence the radio spectrum work plan for 2020 to 2022 in Qatar (M2M, IOT, UAS).
<b>CRA Response:</b>
Thanks for the comment. Noted.

<b>IOT</b>
Believe that international harmonization of spectrum and implementation of outcomes of ITU WRC-19 as well as the proposed plan for mobile services, including 5G, will encourage innovation, investment in infrastructure and radiocommunication services to serve all users and use cases in the years to come.
<b>CRA Response:</b>
Thanks for the comment. Noted.

**IOT**

Welcome the CRA's intentions to promote a comprehensive regulatory framework to support the development and deployment of IoT devices and services in the country.

**CRA Response:**

Thanks for the comment.

**IOT**

Recommend to CRA to adopt an MNO centric model to deliver connectivity and develop the IoT market in Qatar using their current and future spectrum allocations in service neutral manner. Such Model would avoid fragmentation of spectrum and ensure spectrum usage efficiency. While delivering MBB services over there spectrum, MNOs can also deliver IoT services in particular over low bands (e.g. 700, 800, 900 MHz and in the future 600MHz) using 3GPP M2M technologies such as NB-IoT or MTC.

**CRA Response:**

CRA will take this suggestion into consideration while developing the IoT regulatory framework.

## Section 10

### Programme Making and Special Events (PMSE)

This section includes a summary of the comments received from the Industry on PMSE along with the CRA feedback.

<b>PMSE</b>
Spectrum is a scarce resource and its use, especially during, before and after large public events such as the FIFA World Cup or MotoGP (spectrum allocations and licensing) will require careful planning.
<b>CRA Response:</b>
CRA will publish the spectrum plan for FIFA World Cup 2022 which will cover all major aspects.

<b>PMSE</b>
Draw CRA's attention to the ongoing work items within ITU-R, in particular the work continuing under ITU-R's Resolution 59-2 (WRC-19) "Studies on availability of frequency bands for worldwide and/or regional harmonization and conditions for their use by terrestrial electronic news gathering systems. This work could be the basis for CRA's ongoing and future frequency management considerations to the extent that it affects PMSE.
<b>CRA Response:</b>
Thanks for the comment. Noted.

<b>PMSE</b>
Believes that the suggested work plan covers all major aspects. As mentioned, the FIFA World Cup but also other events such as MotoGP require careful spectrum planning, not only for the event itself, but also before and after it. It is essential that whichever body responsible for allocating spectrum has a deep understanding, including hands-on experience, of spectrum usage by broadcasters and other interested parties.
<b>CRA Response:</b>
Thanks for the comment. Noted.

<b>PMSE</b>
-------------



Acceptable spectrum or license fees will help reduce the risk of interference at the planned FIFA-related events and beyond. Especially for the FIFA-related events, CRA may consider assigning licenses for each event by issuing stickers for the licensed equipment.

**CRA Response:**

CRA will take this view into consideration.

**PMSE**

Bands need to be available for PMSE during the FIFA World Cup 2022 and beyond. CRA should also be careful to allocate frequencies to mobile (IMT) and keep in mind that many ITU-R PMSE (ENG/SAB/SAP) reports will be reviewed and updated in the study period 2019-2023, providing an outlook on future needs of PMSE and other applications.

**CRA Response:**

Thanks for the comment. Noted.

**PMSE**

The DECT range, 1880-1900 MHz, is currently used heavily for wireless talkback applications. Currently, there are discussions on ETSI level to extend that range to 1920 MHz. CRA should therefore consider DECT appropriately in its plans.

**CRA Response:**

CRA will consider this aspect and the said band as part of its spectrum plan for FIFA World Cup 2022.

**PMSE**

CRA probably is already aware of the activities in Europe, especially in Germany, where out of the spectrum 3.4 to 3.8 GHz the range 3.4 to 3.7 GHz was assigned to IMT, while the range 3.7 to 3.8 GHz was not auctioned off, but remains available for industrial operations. These operations include video PMSE. Spectrum above 2 GHz is one of the core band for video operations. The ongoing change in video quality from 4k to 8K, will increase the radio spectrum demand of different teams.

**CRA Response:**

Thanks for this comment. Noted.

**PMSE**

CRA to focus on PMSE, long-term observation of the spectrum uses and in combination with input from the event's frequency coordinators involved and refer to studies of methodologies and results of PMSE for the spectrum usage trends.

**CRA Response:**

Thanks for the comment. Noted.

**PMSE**

PMSE needs to be listed as a separate action item to ensure that the coverage of the FIFA World Cup and any of its related events before and after the World Cup will be carefully planned and put into practice.

**CRA Response:**

Thanks for the comment. Noted.

**PMSE**

CRA to only consider the PMSE equipment that is currently available on the market and that is fully tested and accepted by thousands of professional and non-professional users.

**CRA Response:**

CRA will take this opinion into consideration.

**PMSE**

Welcome the CRA's activities especially in the light of the coming FIFA World Cup-related events. CRA should carefully monitor the ITU-R activities and learn from the experience of other regulators worldwide that have handled large events.

**CRA Response:**

Thanks for the comment. Noted.

**PMSE**

A regulator can only gain a reliable trend in a spectrum use from a long-term observation of the spectrum use and in combination with input from the event's frequency coordinators involved.

**CRA Response:**

Thanks for the comment. Noted.

## Section II

### Spectrum Monitoring

This section includes a summary of the comments received from the Industry on spectrum monitoring along with the CRA feedback.

<b>Spectrum Monitoring</b>
Protection of the incumbent FSS links should be ensured while doing the spectrum re-planning in the 26 GHz frequency band.
<b>CRA Response:</b>
CRA contemplates protection of incumbent services while allocating or assigning spectrum for any new services.

<b>Spectrum Monitoring</b>
Use of HW/SW Tools developed by the APWPT and DKE for Monitoring and Documenting spectrum usage.
<b>CRA Response:</b>
Thanks for the suggestion. Noted.

<b>Spectrum Monitoring</b>
CRA should start monitoring of the 3.6 GHz band in 2020.
<b>CRA Response:</b>
Thanks for the comment. Noted.

<b>Spectrum Monitoring</b>
CRA to explore national agreement on cross border for TDD.
<b>CRA Response:</b>

CRA has already initiated the discussion on this topic with the neighboring countries.

### **Spectrum Monitoring**

Include monitoring plans on (470 - 694 MHz (WRC 23 AI 1.5), 1427 - 1518 MHz band 6425 - 7125 MHz (WRC 23 AI 1.2) and 5925 - 6425MHz.

#### **CRA Response:**

CRA considers the said bands within its ongoing monitoring activities.

### **Spectrum Monitoring**

Monitor interference in and among GSO and NGSO in Ku and Ka band.

#### **CRA Response:**

CRA will take care of the satellite spectrum upon commissioning of its Space Monitoring Center.

**Section 12**  
**Other Matters**

This section includes a summary of the comments received from the Industry on other matters along with the CRA feedback.

<b>Other Matters</b>
The spectrum programs relevant and appropriate. CRA to clarify on whether fixed radio system spectrum (including Microwave systems that are necessary to support mobile networks deployment) could be envisaged as a part of this spectrum outlook and if yes, under which program?
<b>CRA Response:</b>
CRA considers the fixed radio system as part of its ongoing activities and will continue support the spectrum requirements from all users on this matter.

<b>Other Matters</b>
Believe it is important to maintain stability for current assignments for PPDR broadband in Qatar in any future band plan review so that no additional constraints are applied to existing assignments. Believe that the PMR spectrum should be more fully included as it is only covered under Talkback Spectrum.
<b>CRA Response:</b>
CRA considers the PPDR and PMR spectrum as part of its ongoing activities and continues its support to all users.

<b>Other Matters</b>
Additional services (e.g. LTE PTT, Industrial Wireless, Mission critical).
<b>CRA Response:</b>
CRA considers these features and applications as important and are in discussion with concerned parties.

<b>Other Matters</b>
----------------------

Telecommunication services through High Altitude Platform Stations (HAPS) is a new avenue being considered internationally. WRC-19 has also identified / allocated frequency bands for HAPS. A clear and self-sufficient regulatory framework needs to be developed for HAPS.

**CRA Response:**

CRA will consider this as part of future program and welcome any contribution from the industry. CRA also welcomes any interest from any stakeholder on this topic.

**Other Matters**

Invite CRA to consider fixed radio system spectrum (including microwave systems) in Qatar spectrum outlook 2022. In scenarios where fiber is difficult to deploy or wireless sites require quicker time to market, microwave is the preferable solution and will continue to play a critical role in the following years.

**CRA Response:**

CRA considers the fixed radio system as part of its ongoing activities and will continue support the spectrum requirements from all users on this matter.

**Other Matters**

Include EMF measurements for Public Awareness (esp. for 5G).

**CRA Response:**

CRA considers the public awareness as one of its key responsibilities. Events and programs are planned frequently in this regard to address any concern.

**Other Matters**

CRA to organize sessions with relevant stakeholders to showcase its systems.

**CRA Response:**

CRA welcomes the view to showcase its system to stakeholders and interested parties.

**Other Matters**

Class License for Short Range Devices to be reviewed and updated by CRA. CRA needs to release more spectrum for SRD (below 1 GHz) at more liberal conditions.

**CRA Response:**

CRA will consider this suggestion when updating the Class License for Short Range Devices. CRA believes that there are new elements to be included in the Class License. CRA will conduct a public consultation in due course to ensure contributions of the industry in this process.