Dynamic Spectrum Alliance Limited
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October 21, 2021

Communications and Information Technology Commission (CITC)
Al-Nakheel District
Prince Turki Bin Abdul Aziz I Street intersection with Imam Saud Bin Abdul Aziz Road
PO Box 75606, Riyadh 11588
Saudi Arabia

Spectrum.Strategy@citc.gov.sa

Re: DSA Comments to the Public Consultation on "Public Consultation on Fixed Radio Service: Frequency Allocation and Use Regulation for Wireless Links".

Dear Sir/Madam,

The Dynamic Spectrum Alliance ("DSA"[1]) respectfully submits its comments in response to the Communications and Information Technology Commission ("CITC") Public Consultation on Fixed Radio Service: Frequency Allocation and Use Regulation for Wireless Links.[2]

The DSA commends CITC for authorizing low power WLAN operations[3] and opening a consultation that identified several frequency bands for possible light licensing[4], including one for higher-power WLAN operations.

The DSA agrees that license-exempt use and light license operations should be authorized on a non-interference basis, meaning license-exempt and light licensed users must not cause harmful interference to other users.

[1] The DSA is a global, cross-industry, not for profit organization advocating for laws, regulations, and economic best practices that will lead to more efficient utilization of spectrum, fostering innovation and affordable connectivity for all. Our membership spans multinationals, small-and medium-sized enterprises, as well as academic, research and other organizations from around the world all working to create innovative solutions that will benefit consumers and businesses alike by making spectrum abundant through dynamic spectrum sharing. A full list of DSA members is available on the DSA's website at www.dynamicspectrumalliance.org/members

[2] *Fixed Radio Service: Frequency Allocation and Use Regulation for Wireless Links,* Communications and Information Technology Commission (CITC) of The Kingdom of Saudi Arabia, September 2021 ("Public Consultation").

[3] *Radio Spectrum Allocation and Use Regulation for WLAN Applications*, Communications and Information Technology Commission (CITC) of The Kingdom of Saudi Arabia, June 2021.

[4] *Public Consultation on Spectrum Light Licensing,* Communications and Information Technology Commission (CITC) of The Kingdom of Saudi Arabia, Public Consultation, August 2021.

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However, the DSA believes that with the right regulatory framework and tools, there are spectrum bands where higher-power license-exempt and light licensed operations can successfully share spectrum with incumbents and not cause harmful interference.

Spectrum sharing can be achieved through time separation, frequency separation, spatial location separation, signal separation, and combinations of the above. Fully automated and partially automated spectrum management tools can be used to control (and provide) access to license-exempt or light licensed devices. Ultimately, the best approach for successful sharing depends on the incumbent services in the specific band under consideration and the characteristics of the license-exempt or light licensed operations being proposed.

One observation is that for higher-power license-exempt and light licensed operations to successfully share spectrum with incumbents, the use of a spectrum management tool must be incorporated into the rules. Examples include license-exempt white space devices operating in the broadcast television bands (in several countries), Citizens Broadband Radio Service in the United States, and standard power unlicensed device operations in the 6 GHz band in the United States and other countries.

In spectrum bands with fixed wireless links, for higher-power indoor and outdoor license-exempt and lightly licensed operations to share with the protected service, a spectrum management tool using some form of a geo-location and database method is required. License-exempt devices operating at Short Range Device ("SRD") power levels or lower power devices that are authorized to operate indoors only do not require the use of such tools.

The DSA recognizes the challenge of identifying potential interferers and developing mitigation strategies for high-power outdoor operations in license-exempt spectrum bands authorized for Industrial, Medical, and Scientific ('ISM') applications, such as the 2400-2500 MHz and 5725-5875 MHz frequency bands.[5,6] Fortunately, though, the bands CITC is considering for license-exempt use and light licensing in its 2021 consultations are not ISM bands. For the fixed service bands identified in the Public Consultation, the DSA believes that automated spectrum management tools can be leveraged, whereby it is economically feasible to protect incumbents from receiving harmful interference from outdoor light licensed systems. Relocating fixed wireless links to another band purely as a preventative measure for avoiding potential interference is not necessary.

In 2019, the DSA released *Automated Frequency Coordination: An Established Tool for Modern Spectrum Measurement*.[7] As the report details, the use of databases to coordinate spectrum assignments has evolved but is really nothing new. The basic steps are exactly the same as in a manual frequency coordination process. What is relatively new, though, is that there have been significant improvements in the computation power to run

[5] *See* National Frequency Plan in the Kingdom of Saudi Arabia, National Footnote 04 (2018).

[6] *See* National Frequency Plan in the Kingdom of Saudi Arabia, National Footnote 05 (2018).

[7] *Automated Frequency Coordination: An Established Tool for Modern Spectrum Measurement,* Dynamic Spectrum Alliance, March 2019. Automated Frequency Coordination (dynamicspectrumalliance.org)

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advanced propagation analysis efficiently and rapidly, which allows for the coordination of devices and users in near real-time. Additionally, there is now more agile wireless equipment that can interact directly with a dynamic frequency coordination database.

There is no question that today we have the technical ability to automate frequency coordination and thereby lower transaction costs, use spectrum more efficiently, speed time to market, protect incumbents from interference with certainty, and generally expand the supply of wireless connectivity that is fast becoming, like electricity, a critical input for most other industries and economic activity. Regulators now have the models and technologies needed to authorize automated frequency coordination systems that best fit its policy goal, which will vary depending on the nature of the incumbent service, the propagation characteristics and size of the band, the nature of the shared-access use, and other factors.

Section #	Question # (if applicable)	Response & Comments
2.6	**Q 12:** Do you agree with the reasons behind the proposed changes? Are there other methods of sharing between license exempt and fixed wireless links which CITC should consider?	There are a variety of automated spectrum management tools available for CITC to consider applying that will enable higher power outdoor licensed-exempt operations to share spectrum bands with fixed wireless links. At these higher power levels, the spectrum management tool can use some variation of a geo-location and database approach.
3.4.6	**Q 28:** Do you have any comments on the impact of light licensing on fixed wireless links?	With the appropriate spectrum management tools in place to ensure that incumbents are protected from receiving harmful interference, light licensed operations will have no impact on fixed wireless links.

The DSA appreciates the opportunity to participate in the Public Consultation and to present our views and comments. We are available to discuss these comments and provide any additional information.

Respectfully submitted,

Martha SUAREZ
President
Dynamic Spectrum Alliance