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Celona Inc. (Celona) is a US based company providing industry's leading private 5G Network Platform with a comprehensive software suite. Our innovative end-to-end solution includes all the necessary components of a localized private 5G network including Radio (RAN), Core Network and Network Management and Orchestration Systems to provide indoor and outdoor 5G cellular service using private or local spectrum such as CBRS. Celona has developed the industry's first end-to-end, vertically integrated private 5G platform explicitly designed for mission-critical enterprise environments. Our unique solution architecture combines AI-based operations and cloud-native software architecture to integrate with enterprise local area network (LAN) infrastructure to ensure a secure 5G network.

Leveraging the CBRS spectrum, Celona's wireless solution delivers unprecedented range and predictability for mission critical applications for the operation of mobile devices and IoT infrastructure for many enterprises, and industrial settings such as factories, ports, and warehouses in US. These and other industrial verticals have begun deploying private 5G networks to achieve cost-effective operational efficiency, safety, and productivity that cannot be delivered by exclusively licensed spectrum or unlicensed spectrum like 2.4 GHz, or 5 GHz or 6 GHz used by Wi-Fi deployments. As a result, the private 5G network market will grow exponentially, with an estimated revenue of USD 41 billion by 2030¹. In addition, most Fortune 500 companies in the US are investing in private 5G to deploy sensors, interconnected devices, IOTs, and AGVs targeting increasingly sophisticated automation processes using AI and ML. If this trend continues, the density of private 5G deployments will not be adequately handled by the mere 150 MHz CBRS spectrum available today. Therefore, the NTIA and FCC must adopt more frequency-coordinated, shared spectrum models in the desirable mid-band frequency, like 3.1-3.45 GHz and 12.7 GHz.

¹ <https://www.grandviewresearch.com/industry-analysis/private-5g-network-market>

The need for spectrum is increasing rapidly due to the exponential growth in the use of wireless devices and the demand for high-speed, reliable wireless connectivity. In addition, new technologies such as private 5G networks require even more spectrum to function appropriately for advanced transportation technologies,

industrial and commercial applications such as manufacturing, agriculture, and utilities, wireless medical devices, telemedicine, Internet of things (IoT), and smart cities, and National defense and homeland security.

Spectrum is a finite resource, and only a limited amount is available. Therefore, government agencies (DoD, FCC, NTIA, NIST) and standardization bodies (3GPP, OnGo Alliance, and 5G ACIA) must manage the spectrum allocation to ensure it is used efficiently and fairly. Overall, the need for spectrum will continue to grow as more devices and technologies are developed. Therefore, it will be important to manage this resource effectively to ensure everyone can access the wireless connectivity they need.

In addition, each organization must strategically plan the 5G deployments, considering the continuous wireless innovation, and lay a road map for the next wireless technology, 6G and beyond. Therefore, there is a greater need for more mid-band spectrum in the US than ever.

Celona's private 5G solutions have been deployed in multiple locations in US in the CBRS band. CBRS band (3.55-3.7 GHz) have total of 150 MHz available, and contention for spectrum in many locations is occurring due to multiple different entities using the same CBRS band. Also, the demand for more spectrum is ever increasing for many high-speed broadband applications such as IP video and AR/VR used by US companies. So, more spectrum is desperately needed for current and future private 5G deployments.

The 3.1-3.45 GHz, currently a DoD spectrum, also conveniently lies in the desirable 5G mid-band frequency like CBRS. Therefore, Celona encourages the NTIA to enable 3.1-3.45 GHz for shared usage for private 5G networks as soon as possible given this band holds enormous potential for more intensive use and opens new deployments for 5G-Advanced and 6G.

The success of shared models like CBRS proves that sharing is possible by protecting the incumbent operations. Hence, the next generation of wireless technologies will be more than just mobile broadband: digital transformation of businesses and services focusing on the orchestration and automation of processes will be key verticals that will benefit from access to spectrum licensed under an approach that strictly protects incumbents while providing access to second tier users.

Celona supports the NTIA in adopting spectrum-sharing models that bring high-speed, low-cost broadband to the enterprise market. The current discussions on the DoD 3.1-3.45 GHz spectrum band in the National Spectrum Consortium (NSC) PATHSS supports a Dynamic Spectrum Management System (DSMS), a spectrum-sharing architecture model that will alleviate the increasing demand for wireless connectivity while protecting the incumbent's critical DoD operation. At the same time, it also enables multiple categories of users ideal for deploying the latest technological advancements and creating new opportunities and innovation throughout the nation. The incumbent informing capability (IIC) that NTIA is pursuing to support spectrum sharing between federal and non-federal users is an excellent way to enable the ecosystem.

We fully support this approach and recommend a simple, easy to use and scalable IIC solution be commercially available as soon as possible.

The other recent mid-band spectrum, 12.7 GHz band, needs to be more efficiently utilized and has excellent potential for more intensive use by private 5G deployments. When FCC authorized operation in the CBRS spectrum, it enriched the 5G ecosystem and spurred innovation among enterprises, community anchor institutions, and several smaller Wireless Internet Service Providers (WISPs) who wanted to break free from proprietary systems and create their own private networks.

Celona does not advocate sunseting or relocating incumbent users on any of the government spectra but instead supports coexisting with the incumbents with high priority through a dynamic spectrum allocation model for efficient frequency coordination to the right spectrum choice to eliminate any possible interference. At the same time, Celona appreciates the need for a two-tier database-based band-sharing scenario with incumbents, ensuring that secondary users do not interfere with incumbent operations. Ultimately, coordinated shared access to the band avoids the expense of disrupting, delaying, or relocating incumbents and also makes the band available for many verticals and enterprises mentioned above. Also, Celona firmly believes that for low-power indoor operation, there is no need for coordination (similar to the low-power indoor rules for unlicensed operation in 6 GHz), and there is only a need for coordination in the outdoor high-power transmission.

In summary, Celona is very supportive of NTIA's National Spectrum Strategy and recommends continuing to expand the shared spectrum framework that started in CBRS to new spectrum bands such as 3.1-3.45 GHz and 12.7 GHz. Expedited and decisive actions by NTIA will be an enormous boost for US 5G, 5G-Advanced and 6G leadership, and is a key differentiator for US industries such as manufacturing, agriculture, logistics, as well as national defense and homeland security.

Sincerely,

DocuSigned by:
Mehmet Yavuz
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Mehmet Yavuz

CTO/Co-founder