



a business unit of  
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Office fédéral de la communication  
Section Réseaux et services  
Rue de l'Avenir 44  
2501 Bienne

**Re: “Consultation publique concernant la mise au concours et l'attribution de nouvelles fréquences de téléphonie mobile en Suisse”.**

*Ruckus Wireless would like to submit the following brief responses to the request with regards to some of the specific questions that your office has raised regarding broadening the 5G ecosystem with new players and supporting vertical industry deployments. These areas have been a focus for Ruckus with our OpenG solutions, which bring the cost model and simplicity of Wi-Fi to in-building and private LTE networks. The initial activity for OpenG has been around the Citizens Broadband Radio Service (CBRS) in the 3.5 GHz band in the United States, however we are also very interested in the opportunities in Europe, especially in the 3.4-3.8 GHz bands in regulatory domains where micro-operator or local authorizations are supported. We would be very interested in discussing these matters in more detail with you as you proceed to a formal consultation.*

#### **About Ruckus Wireless**

Beginning operations in June 2004, Ruckus Wireless, Inc. is one of the world's fastest growing wireless technology companies. Ruckus offers a broad range of advanced indoor and outdoor “Smart Wi-Fi” systems for service providers and enterprises. The company is credited with developing the first adaptive antenna (Smart Wi-Fi) technology that improves the reliability, performance and capacity of Wi-Fi networks. Ruckus recently announced its line of “OpenG” LTE products, which bring the simplicity and economics of Wi-Fi to the market for in-building cellular services.

According to Dell'Oro's Q3 2015 report, Ruckus is #1 in the Service Provider Wi-Fi market with 38% marketshare and #3 in the Enterprise Wireless LAN market. With approximately 61,000 end customers and more than 10,000 channel partners worldwide, Ruckus sells its Wi-Fi systems directly to broadband providers and indirectly to enterprise customers through a global network of value-added partners.

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19. Comment évaluez-vous l'attractivité de cette bande de fréquences? Ces blocs devraient-ils aussi être attribués? (motiver votre réponse s.v.p.)

19. How do you assess the attractiveness of this frequency band? Should these blocks also be allocated? (Motivate your answer s.v.p.)

Ruckus believes that the 3400-3800 MHz band provides an opportunity to further integrate permissive use into the cellular eco-system. This permissive use will be critical in providing the necessary in building coverage that will be required for seamless 5G coverage for subscribers moving from the street into their offices, shopping malls etc, where building penetration losses will hamper the ability of the traditional macro cell deployment models to provide the required bandwidth and coverage for ubiquitous 5G operation. Such permissive use would be at lower power levels than the more usual macro cell usage as it would be intended to provide coverage within a limited area.

In addition, the RSPG strategic roadmap for 5G, issued at the end of 2016, highlights this band as a 5G pioneer band. This will help to focus the interest in this band as the one for user equipment in which volume is very important.

20. Dans la bande des 3400-3600 MHz, privilégiez-vous l'utilisation TDD ou FDD?

20. In the 3400-3600 MHz band, do you favor the use of TDD or FDD?

Ruckus favours the use of TDD in this band in line with the 3GPP designation for band 42.

21. Quels aspects faut-il prendre en considération lors de l'adjudication de cette bande de fréquences?

21. What aspects should be taken into account when awarding this frequency band?

Owing to the propagation characteristics of this frequency and the amount of spectrum available, Ruckus believes that introducing new players to the value chain, expanding the use cases, and opening up a broader set of deployment models are all key to realizing the densification and in-building coverage goals of 5G. While mobile operators will continue to lead, new players with access to cellular-oriented spectrum via sharing frameworks are needed to deploy networks in all manner of indoor and outdoor areas. These networks can be utilized for internal services (e.g. Private Cellular or Industrial IOT) and also made available to the subscribers of the mobile operators via Neutral Host Networking (NHN) mechanisms currently being developed. This distributed deployment model has been phenomenally successful for Wi-Fi, and is a natural evolution for cellular architectures as we move to much denser deployments at higher frequencies.

Ruckus is seeing tremendous interest from our existing vertical industry customer segments in our OpenG solutions for in-building and localized LTE solutions utilizing coordinated shared spectrum. Some of the vertical industries that are particularly interested include; hospitality, healthcare, higher education, airports, stadiums, municipalities, industrial, and logistics. All of these sectors have use cases to provide private and/or public LTE services, typically as a complementary service layer to their existing Wi-Fi networks. We believe the requirements from these types of vertical segments will increase as we move into the 5G era.

In order to promote these types of vertical industry deployments and operations, regulators should pursue measures that make cellular-oriented spectrum available for general authorized use, especially in-building.

22. Comment évaluez-vous votre intérêt à acquérir des fréquences dans cette bande? A votre avis, existe-t-il un besoin minimal au-dessous duquel l'utilisation serait inefficace? Si oui, quel est ce volume de fréquences?

22. How would you rate your interest in acquiring frequencies in this band? In your opinion, is there a minimal need below which use would be ineffective? If so, what is this volume of frequencies?

Ruckus would be very interested in obtaining general authorizations to the 3400-3600 MHz frequencies for our customers use. As Ruckus advocates for the ability to reutilize the spectrum permissively indoors and in outdoor locations where it is not deployed by a licensee, we would utilize as much of the frequency range as the regulator chooses to make available on this permissive basis. However, any general authorization which allows less than 20 MHz for permissive uses would not generate much market demand in our opinion.

### **Conclusion**

Thank you for the opportunity to provide Ruckus' input to the Telecommunications Spectrum Office on these matters. If you have any questions, or require additional information, please let me know.

Sincerely,

Ian Marshall