



## Introducing 5G into C-band



### 5G and satellite co-existence: There's no such thing as simple

As an increasing number of countries begin to consider licensing 5G services, and the associated need for large contiguous blocks of spectrum, there is renewed focus on the potential use of C-band (3400 – 3800 MHz). However, there is a relatively small amount of C-band spectrum and it is used by satellite communication services in varying degrees, in most countries. Introducing 5G into the band without adversely disrupting important satellite services by causing harmful interference is not a straightforward task and without careful planning and consideration could result in the loss of anything from air traffic control capabilities to household television reception.

#### Key to the use of C-band for 5G services are a number of questions which regulators need to be able to answer:

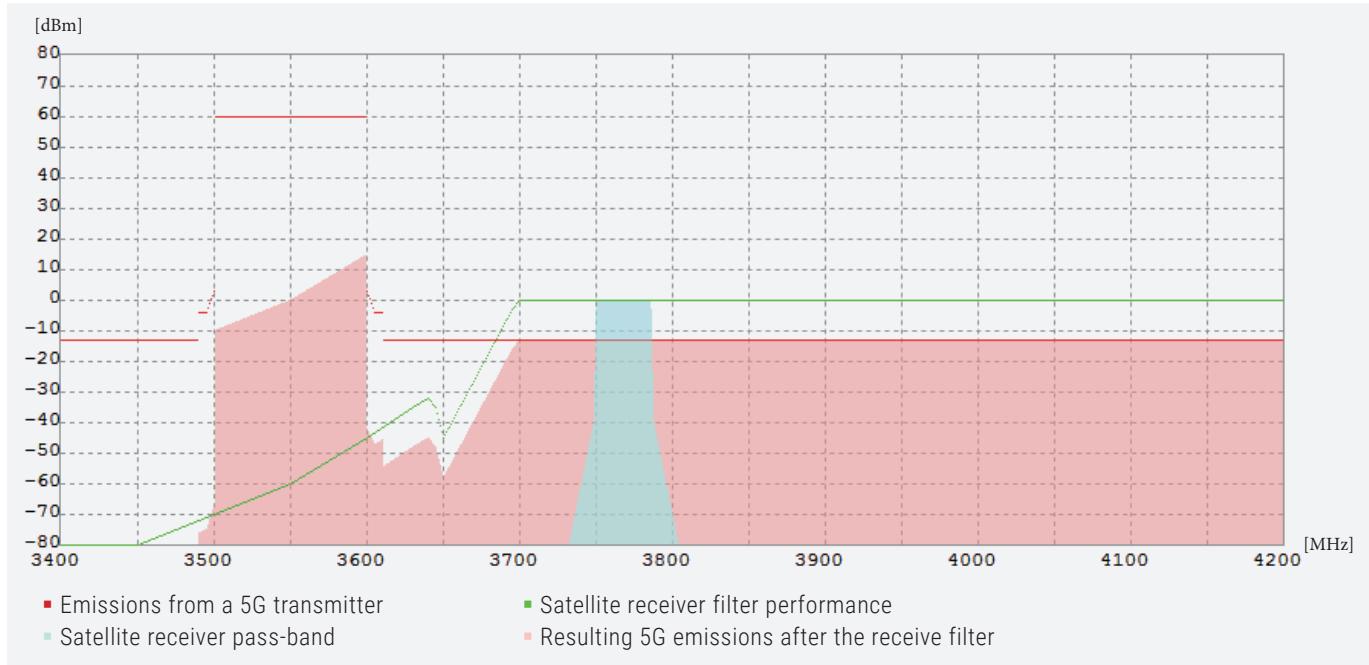
- Which satellite services need protection and what are their parameters?
- How much of the C-band can be identified for 5G services?
- Does a guard-band need to be left between 5G and satellite services, and if so, how large?
- What type of 5G services do operators wish to offer, and what type of interference scenarios does this produce?
- Are technical mitigation measures needed either for the 5G networks, or the satellite receivers?
- What physical separation is needed between satellite receivers and 5G base stations?
- Is cross-border interference likely to be caused, and how should this be handled?

#### Maximising 5G coverage whilst protecting satellite services

Answering these questions leads to the ability to define the conditions associated with 5G roll-out which both maximise the potential coverage of 5G services and protect important incumbent satellite services. The answers, however, are not independent from each other, and finding the right combination of factors that will lead to the best possible outcome requires a thorough understanding of all the aspects involved.

## LS telcom provides a thorough understanding of 5G roll-out and compatibility with other services

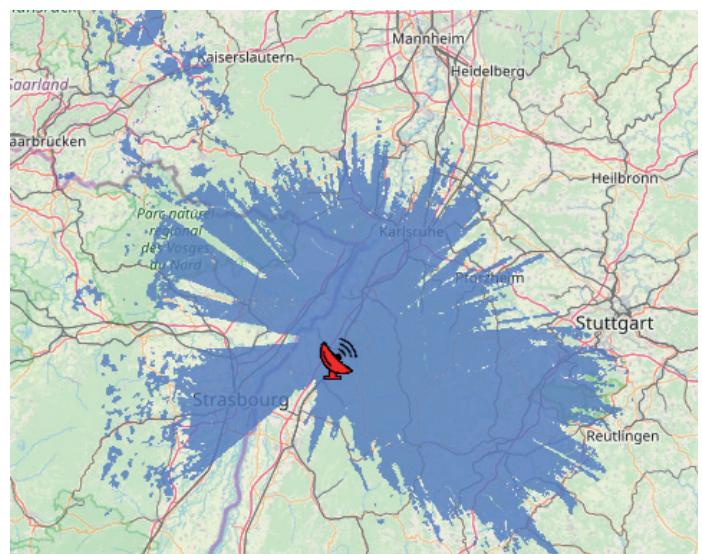
As the world's leading provider of software tools for spectrum managers and users, LS telcom has developed a capability specifically targeted at answering these questions, and permitting 5G services to coexist with other services using C-band. Combined with the knowledge of our expert consultants, who are at the forefront of the development of the necessary technologies and regulatory approaches, we offer a full range of services that will allow any country to optimize 5G roll-out in the C-band.



*Calculating the impact of 5G transmissions on satellite reception*

### The benefits of using the LS telcom capability are to ensure every angle is properly covered:

- An assessment of satellite usage, identifying critical services and locations, frequencies used, technical parameters, receiver types and performance both in the country concerned and its neighbours.
- Preparing realistic 5G roll-out scenarios including service types and locations (indoor and outdoor), transmission parameters, antenna types and heights and user distribution.
- Interpretation of 5G 3GPP specifications as they relate to interference scenarios for 5G coexistence.
- Modelling of interference between 5G services and other services using the same (and adjacent) frequency bands taking into account the full range of parameters that could lead to interference problems.
- Developing the necessary technical criteria and regulatory requirements to enable optimum 5G roll-out including an analysis of the cost of any mitigation measures necessary.
- Determining the amount of spectrum that could usefully be used for 5G services and options for modifying existing satellite services to permit additional spectrum to be used for 5G services.



*Assessing the required protection zone*

Using LS telcom's extensive experience in this field, will minimize the risk of interference problems and enable 5G services to deliver their expected benefits in a safe and secure wireless environment.

**For further information of LS telcom, please visit our website [www.LStelcom.com](http://www.LStelcom.com) or contact [Info@LStelcom.com](mailto:Info@LStelcom.com).**