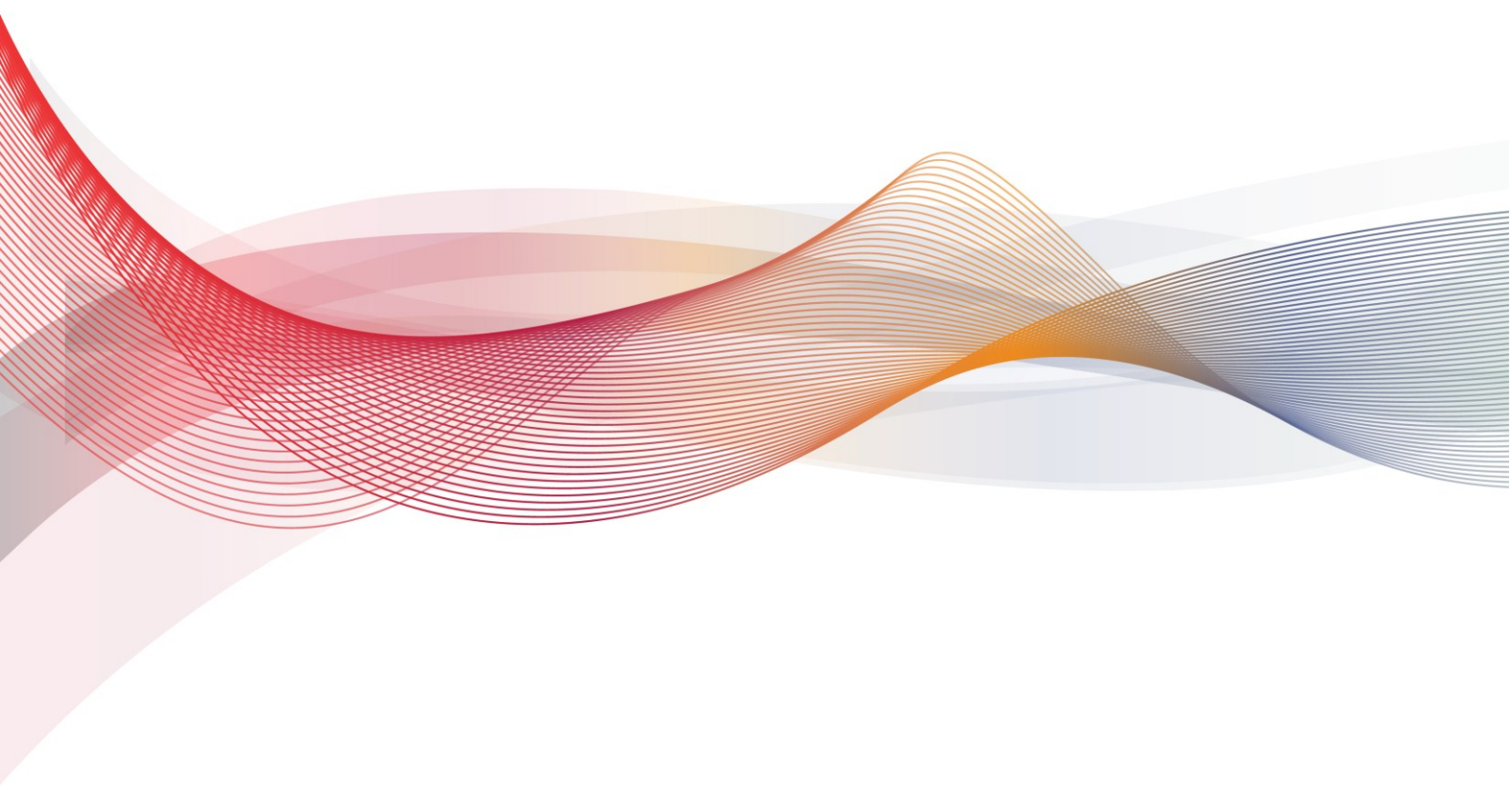
GSMA Public Policy Position

The case for a mobile broadband identification in the C-Band at WRC-15: a Pacific Island perspective



Executive Summary

The outcome of the World Radiocommunication Conference in November 2015 (WRC-15) will be the single most important factor determining the future availability of affordable, ubiquitous, high-speed mobile broadband services. The event will see administrations from around the world agree on changes to international spectrum allocations, and associated regulatory provisions, with a major focus on making additional bands available for potential mobile broadband use.

The GSMA recommends that a portion of the C-Band (3.4-4.2GHz) is identified for International Mobile Telecommunications* (IMT) at WRC-15. It is one of the few bands where a harmonised portion could be made available for potential future mobile broadband use worldwide and which is large enough to support very high levels of data traffic and the fastest data rates.

Governments in the Pacific Islands may be reticent to support an identification because local mobile data demands are less intense and the C-Band is heavily relied upon for Fixed Satellite Services (FSS). However, it is important to recognise that an IMT identification at the international level will not impact C-band satellite services in the Pacific Islands for as long as they are deemed necessary.

Regulators will only choose to move services out of a portion of the band once local mobile data demands require it, *and* all satellite requirements can be viably met in a smaller portion of the C-Band and in higher frequency bands. This will eventually become possible because satellite companies such as O3b and Avanti are increasingly using higher frequency bands and new technologies to deliver improved performance and better value services in the Pacific Islands despite the high levels of rainfall.

Some concern has been raised that medium-term mobile broadband deployments in the C-Band in parts of the Asia Pacific could negatively impact the addressable market for C-Band satellite services. However, the areas where C-Band mobile broadband deployments would take place (i.e. very busy urban hotspots) don't tend to use FSS as those areas mostly rely on the fixed infrastructure. There is also no risk of interference from countries which do license the band for mobile because the band is already used for both mobile and satellite services in numerous markets with no known cases of cross-border interference.

An IMT identification will give regulators the flexibility to make a portion of the C-Band available for mobile services only when the need is justified rather than being confined by the existing allocations. By supporting the identification at WRC-15, Pacific Island governments will ensure their citizens benefit from low cost mobile devices when the band is eventually used because deployments in other markets will create a mature equipment ecosystem. There are also powerful economic arguments favouring an identification with the financial benefits of using mobile in the band in Asia Pacific exceeding costs by eight times while also increasing government revenues by $52 billion and creating over 100,000 new jobs.

WRC-15 represents a vital opportunity to ensure the Pacific Islands safeguard their mobile broadband future as data usage increases over the long term. Without an IMT identification in a portion of the C-Band at WRC-15, the socioeconomic benefits of the mobile revolution will be compromised as networks struggle to cope with rising data, initially in other parts of Asia-Pacific and then ultimately in the Pacific Islands too.

***** An IMT identification refers to a specific frequency range in a band that is designated for potential use by compatible mobile broadband technologies, including all 3G and 4G networks.

Future Mobile Spectrum Requirements & Regulatory Considerations

Mobile services are undergoing a period of dramatic growth causing a tremendous increase in data traffic which in turn is making new mobile spectrum essential. From 2008-2013, global mobile data traffic grew 45-fold[2]. Taking into account all other capacity enhancing measures, GSMA research finds that, on average, governments should identify an additional 600–800MHz of spectrum for IMT/mobile broadband at WRC-15 by 2020 in order to meet the growing mobile data demand.[3]

This spectrum must be harmonised globally, or at least regionally, to drive the economies of scale required for a wide range of low cost consumer devices and to enable roaming and minimise cross-border interference. As it takes about eight to ten years to re-allocate, re-assign and re-license spectrum, it is important that governments support new bands now rather than reacting when it is too late to meet growing consumer demand in 2020 and beyond.

Although the amount of new mobile spectrum needed for each national market will vary depending on differing levels of data demand and national priorities, identifying a further 600-800MHz for potential future mobile broadband use at WRC-15 will ultimately benefit the Pacific Islands despite its low level of mobile data usage compared with some other markets. The rate of mobile data growth means new mobile spectrum will ultimately be necessary in the future in the Pacific Islands, so the advanced markets which license these bands in the near-term will create the economies of scale that will allow Pacific Islanders to benefit from a wide range of low cost devices when the spectrum is used for mobile services at a later date.

In the absence of sufficient new mobile broadband identifications, governments will be limited in their ability to make new mobile spectrum available as data traffic rises. The result won't just be a poorer user experience and potentially more expensive mobile services, it will also restrict the major socioeconomic benefits mobile delivers which range from driving new business opportunities and jobs to increasing government revenues.

Agenda Item 1.1 – Suitable New Mobile Bands

At WRC-15, agenda item 1.1 addresses additional spectrum allocations to the mobile service and the identification of frequency bands for IMT/mobile broadband all around the world. The GSMA supports new mobile allocations the following bands: the sub-700MHz UHF (470–694/8MHz), the L-Band (1300–1518MHz), 2.7–2.9GHz and the C-Band (3.4–4.2GHz). Given the C-Band plays a vital role in the Pacific Islands the remainder of this paper will focus on this area. More information on the case for mobile in the three other bands is available from the GSMA website.[4]

C-Band (3.4–4.2GHz)

The GSMA recommends that Pacific Island governments support an identification in a portion of the 3.4–4.2GHz band, taking into account that the 3.4-3.8GHz range has already been standardised by the 3GPP for mobile services and will therefore attract strong mobile device support. The size of the band provides a unique opportunity to deliver very fast mobile broadband services in high demand urban hotspots, such as shopping districts and transport hubs, while also leaving a significant portion of spectrum for satellite services.

Crucially there is significant harmonisation potential which is the key to establishing a wide selection of low cost mobile devices and improving international roaming. A portion of the band (i.e. 3.4–3.6GHz) has already been identified for IMT/mobile broadband in over 90 countries including in much of Europe, the Middle East and Africa as well as a number of countries in Asia and Oceania. Regulators which are under pressure from rapid mobile data growth (e.g. in Europe, South Korea, Japan and Australia), are in favour of a wider C-Band IMT identification to meet the need of mobile broadband services in the near to medium term.

By supporting such an identification at WRC-15, Pacific Island governments stand to reap long-term benefits, with no associated risks, as they will benefit from a wide selection of low-cost mobile devices when they do eventually license a portion of the band for mobile use.

The band is heavily used for FSS, such as broadcast TV, VSATs and satellite broadband, especially in the tropics where the effect of rainfall has historically limited the use of other bands. However, there

are already clear indications that over the longer-term the Pacific Islands will become less reliant on the C-Band as recent technological developments mean that rainfall is becoming less of a limitation[5] to the use of higher frequency bands. Satellite providers are already using the Ka and Ku bands to deliver improved performance and better value broadband services. As these satellite services increasingly migrate to other bands, a portion of the C-Band can be made available for potential future mobile use.

Satellite firm O3b, which specialises in providing broadband services in tropical areas using the Ka band, has been enjoying notable recent success in the Pacific Islands. One example customer is Telecom Cook Islands which has benefited from the wider bandwidths available in the Ka-band, coupled with lower orbit satellites, to backhaul its new 3G mobile broadband service which is reportedly exceeding quality of service expectations.[6] Following these kinds of success stories, a new start-up, Kacific, is focusing solely on providing broadband access to remote parts of the Pacific Islands at significantly lower prices using geo-stationary satellites operating in the Ka-Band. The growing availability of these kinds of services mean the cost of end-user equipment is quickly falling. At the same time, the availability of submarine cable in the Pacific Islands is increasing[7] meaning satellite broadband is already starting to serve as a back-up system in a growing number of areas.[8]

As the requirement for C-Band satellite services in the Pacific Island gradually reduces, and at the same time the need for additional mobile spectrum emerges, then the band can be segmented to allow both to operate. In the meantime, all existing services in the entire C-Band can continue to be protected from cross-border interference through international coordination between neighbouring countries and the use of appropriate technical and regulatory conditions. The 3.4–3.6GHz band is already being successfully shared between mobile operators and satellite providers around the world with no known cases of cross-border interference.

Although there is a clear technical and commercial argument for an IMT identification in the C-Band, it has been argued that there are economic disadvantages. For example, it is claimed that such a move would impact the addressable market for C-Band satellite services and therefore the cost of equipment in the Pacific Islands. However, mobile broadband services in the C-band are only required in busy urban areas where mobile data is rising fastest and where C-Band satellite broadband use is already very low and dropping due to the dominance of fixed broadband and High-Throughput-Satellite.

In fact, the economic argument in favour of a mobile broadband identification is powerful. The financial benefits – even in areas where FSS is highly used – would surpass the costs of moving existing services elsewhere in the C-Band or into different satellite frequencies. A study of the Asia-Pacific market by Frontier Economics shows the benefits exceed costs by approximately eight times, and would increase government revenue by $52 billion and create in excess of 100,000 new jobs.[9]

The Pacific Islands are still in the early stages of LTE deployments which will, as has happened in more mature mobile markets around the world, ultimately lead to a dramatic increase in mobile data usage. An IMT identification in a portion of the C-Band will give regulators the tools to manage this challenge when it emerges – without it they will struggle to prevent a network slowdown. However, this isn't a zero-sum contest between mobile and satellite services, as these technologies and markets evolve regulators can protect the interests of both to create a win-win scenario for citizens.

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[1] GSMA Mobile Economy Report 2014
[2] Cisco's Cisco Visual Networking Index 2008–2013 recorded mobile data traffic in 2008 as 33PB per month. Its 2013–2018 update recorded mobile data traffic in2013 as 1.5 exabytes per month.
[3] See the GSMA's 'Mobile data demand explained' paper - http://www.gsma.com/spectrum/resources
[4] http://www.gsma.com/spectrum/gsma-pp-wrc15/
[5] JTG4567/550-E: A study of rain fade depth on FSS frequency bands
[6] Source: http://www.telecomasia.net/blog/content/o3b-cook-islands-make-case-meosat-backhaul?section=INSIGHT&utm_source=silverpop&utm_medium=newsletter&utm_content=&utm_campaign=telecomasia
[7] Source: http://www.subcableworld.com/daily-newsfeed/57-new-submarine-cable-systems/1982-submarine-fiber-optic-cable-market-in-the-pacific-islands
[8] Source: http://www.pita.org.fj/_resources/files/Pactel%20PR%2021Sep13_Tonga.pdf
[9] The findings from the study are discussed in JTG4567/343-E: Consideration of the 3.4–4.2GHz band and the economic benefits that would arise from making part of this band available for IMT