

# WRC-19 needs to continue to address needs of satellite industry

BY DR ALI EBADI

The satellite industry should be credited for their joint efforts at WRC-15 to ensure the satellite community's best interests are served. Particularly, the band 3600-4200MHz remains exclusively allocated to fixed satellite services (FSS) worldwide into the next decade, except for a few countries in Region 2 (American Region), in which the US, Canada, Cameroon and Costa Rica have allocated 3600-3700MHz for the International Mobile Telecommunications (IMT) industry.

Having lost one battle, IMT proponents were favourably greeted with a new agenda item for WRC-19 — to identify high-frequency bands above 24GHz for IMT/5G services. Nevertheless, in favour of the satellite industry, the conference decided that C-, Ku- and Ka-bands currently allocated to FSS, mobile satellite services (MSS) and broadcast satellite services (BSS) should not be considered in the studies.

However, the satellite industry cannot rest on its laurels and has to stay alert for any possible recommendations of allocation to IMT in the FSS Ka-band (27-30GHz). This alert makes reference to one country's decision to introduce 5G IMT to some portions (27.5-28.35 GHz) of the FSS Ka-band on its domestic allocation.

It should be noted that this is only possible as the FSS is on secondary allocation to the terrestrial services in that country, whereas the specific portion of the Ka-band is allocated to FSS and the terrestrial services on a co-primary basis internationally.

The last conference also allocated the L-band spectrum in the band 1427-1518MHz to IMT in Regions 2 and 3, and some countries in Region 1. This is subject to ITU-R studies to determine the regulatory and technical measures to ensure the compatibility of IMT and broadcasting satellite service (sound) operations in the frequency band 1452-1492MHz.

Besides IMT, the threat to conventional Geostationary (GSO) services will come from the proliferation of HTS (High Throughput Satellite) capacity, from both GSO and non-GSO systems.

The much lower cost per bit offered by HTS systems designed to provide consumer broadband access will lead to their inevitable encroachment into other business verticals (such as enterprise VSAT, video distribution, and so on) even if the capacity is not optimised for such markets. Customers will find a way to utilise HTS capacity at a fraction of the price of wide-beam FSS capacity even though it requires



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them to use multiple beams.

The proliferation of HTS capacity (by reusing the spectrum) is an “arms race” of sorts. An existing FSS satellite operator, when faced with new competition from neighbouring HTS systems that can provide capacity into the market at a tenth of the price of its own offerings, must choose between two unattractive options: (i) abandon that market or (ii) build its own HTS system. The result is — every operator is forced to buy their own HTS satellite(s) and the amount of deployed capacity will be far higher than the supportable demand.

While new technologies such as beam forming, beam hopping, digital channelisers and HTS will significantly encourage the more efficient use of spectrum, it has been suggested the improved bandwidth economics will open up new applications that will increase the demand for capacity, in turn sustaining the financial health of the operators.

But so far, there is little evidence to suggest whether this will happen. The only new market that has evolved in recent years is the airline connectivity market, and it is being chased aggressively by nearly every large satellite fleet operator in the world. It is not clear that the revenue economics for this application are sufficient to support the scale of investments currently being made. Most of the above is true for HTS capacity, whether it is from GSO or non-GSO (NGSO).

The major difference is: NGSO systems will have lots of potential capacity trapped in regions with low customer density (such as oceans or sparsely populated areas), and hence will have higher amortised “cost per sellable bit”. As such, the impact of NGSO systems in any particular regional market will be limited. And in all likelihood, GEO HTS systems will have already affected the market long before the NGSO systems are even operational.

WRC-19 will also focus on some

works relating to the NGSO systems. Considering the need to encourage development and implementation of new technologies in the FSS, WRC-19 will consider technical and operational issues, as well as regulatory provisions for NGSO FSS systems in the 37.5-39.5GHz (space-to-Earth), 39.5-42.5GHz (space-to-Earth), and 47.2-50.2GHz and 50.4-51.4GHz (Earth-to-space) frequency bands.

At the same time, the conference will also study technical and operational issues and regulatory provisions for new NGSO systems in the 3.700-4.200MHz, 4.500-4.800MHz, 5.925-6.425MHz and 6.725-7.025MHz frequency bands allocated to the FSS to protect the GSO FSS networks. These agenda items are another focus of the satellite industry to ensure NGSO systems sufficiently protect the GSO FSS, MSS and BSS networks.

Another critical issue is undoubtedly the approval of the agenda to study the technical and operational characteristics for Earth Station In Motion (ESIM) that operates within geostationary FSS frequency bands. This will definitely require the satellite industry to continue its caution at WRC-19 to ensure FSS is sufficiently protected and no undue constraints are caused to existing and future FSS services.

In the meantime, recognising the

growth of the satellite industry in the past decade, and how this is expected to continue in the next decade, future conferences will study spectrum needs and possible allocation to FSS in the band 51.4-52.4GHz for WRC-19, and 37.5-39.5GHz for the following WRC-23. The satellite industry will have a key role in the studies to justify the additional spectrum needs for the development of the FSS and the sharing and the compatibility studies with existing services on a primary and secondary basis, including in adjacent bands as appropriate.

In summary, there is a need for satellite operators to participate actively in ITU-R study groups dealing with FSS, GSO, NGSO and IMT WRC-19 agenda items. Asian satellite operators have united under the auspices of organisations such as CASBAA and APSCC to raise awareness of the potential threat to satellite spectrum and its impact on both satellite and broadcasting industries and to lobby for support for its protection. Asian operators are also coordinating with operators and interested parties in Europe, Africa and America to ensure that our message is heard at upcoming regulatory meetings. **APB**

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FROM THE  
TOP

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