

WRC-23 Agenda Item 1.15

Additional Spectrum for Earth Station in Motion in the Ku band

Presentation for the Caribbean Telecommunications Union
Spectrum Management Task Force Meeting

February 2023



Satellite. Solutions. The World.

Growing demand for ESIMs in Ku band

Agenda Item 1.15: *to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with **Resolution 172 (WRC-19)**.*

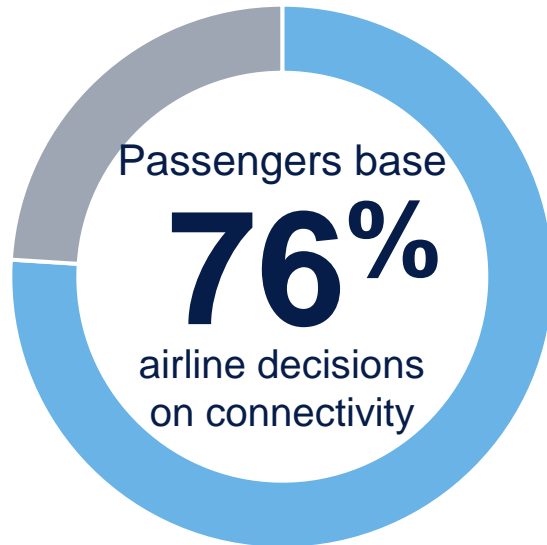
Allocation to services		
Region 1	Region 2	Region 3
12.75-13.25 GHz	FIXED FIXED-SATELLITE (Earth-to-space) 5.441 MOBILE Space research (deep space) (space-to-Earth)	

1. Demand for broadband services by aviation, shipping industries, and passengers for Internet-based applications continues to grow.
2. GSO Ku-band satellites have delivered services to aircraft and vessels for over a decade in non-planned band FSS spectrum .
3. The existing spectrum for uplink Ku-band that can be used for mobility (14 – 14.5 GHz) is insufficient to meet the growing demand for these services.
4. The frequency band 12.75-13.25 GHz is planned to be used globally in conjunction with the 14.0-14.5 GHz frequency band to provide additional uplink capacity in the Ku band for aeronautical and maritime connectivity.

Demand for Aero Mobility



People are accustomed to being connected, even on the move, and appetite for data increasing.

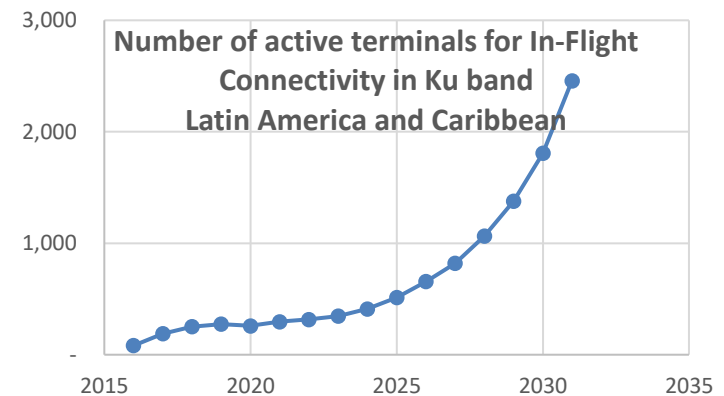
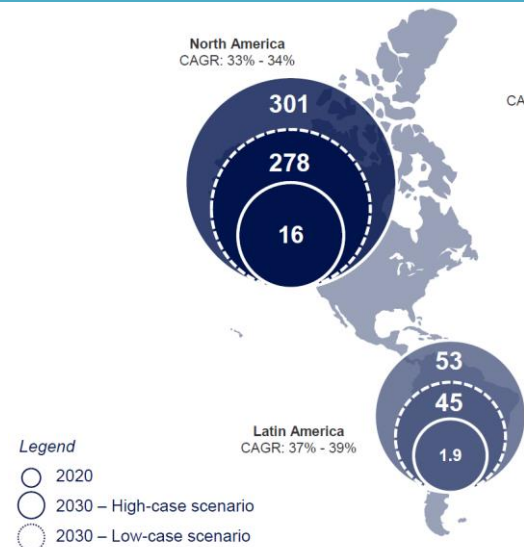


Source: Wi-Fi Alliance – Business Traveler Interview & Source Euroconsult

Connectivity offerings matters more today than ever before.



In Flight Connectivity in Americas - Capacity Growth GBPs



Source: Euroconsult

Demand for Maritime Mobility



GVF Satellite.
Solutions.
The World.

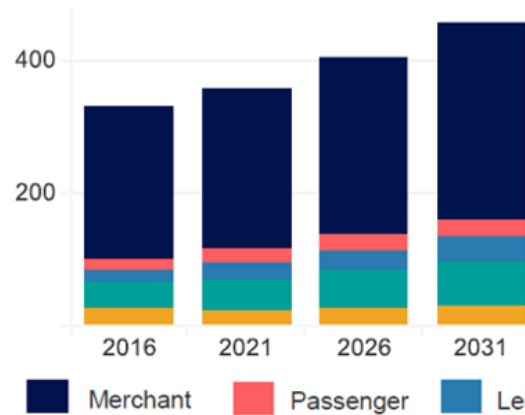
Maritime



Satellites provide connectivity for the offshore oil & gas market

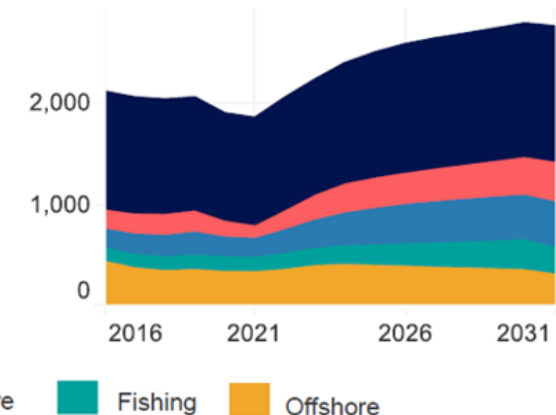
Active VSATs and MSS terminals

In thousands



VSAT and MSS service revenues

\$M



Capacity demand

Source: NSR

Capacity revenues

- Connectivity Demand in the Cruise Sector, where the Caribbean Region is the worldwide leader, will increase significantly



Evolution in Technology

Maritime and in-flight connectivity can only be provided through satellite. The technological evolution in the satellite sector has allowed the provision of mobility services. Technology will continue evolving to allow the growth of this market.

1. The technical evolution in the ground segment has been key for the provision of satellite mobility services.
2. The terminals have evolved from mechanically steerable antennas to full electronic steered antenna phased arrays.
3. Terminals will continue evolving in the next few years, targeting cheaper terminals with better performance.
4. The Space Segment has evolved significantly in the last years. From wide fixed beams to Software Defined Satellites
5. Satellites tomorrow will be fully flexible in terms of Beam Design, Bandwidth allocation, etc.

Evolution in the Ground Segment

From mechanically steerable antennas to electronically steerable phased arrays.



Mechanical
Steerable
Antennas



ThinKom 2Ku

Mechanical
Steerable
Phased Arrays



Portable Antenna



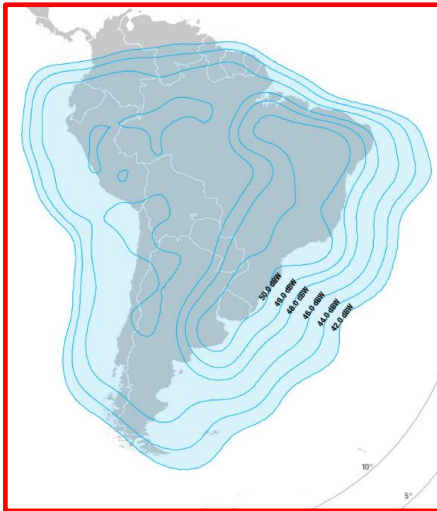
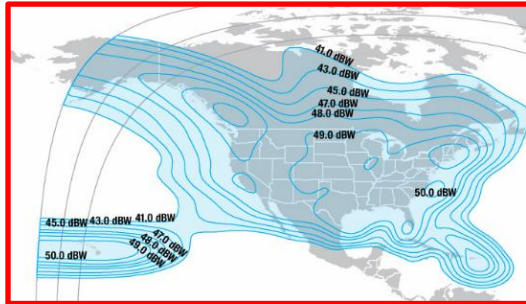
Kymeta Hawk U8



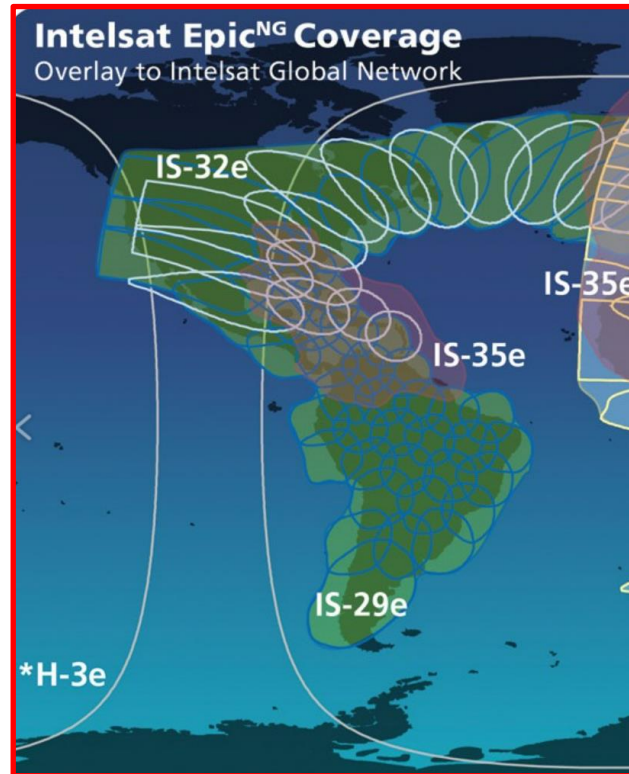
Vehicular Antenna

Electronical
Steerable
Phased Arrays

Evolution in the Space Segment



Wide Beams
Galaxy 28 at 89W



Multi - Spot Beams
High Throughput Satellites

Software Defined
Satellites
Full Flexibility

5G Integration

Importance of this Agenda Item for the CTU

- Allowing use of the globally allocated AP30B 12.75-13.25 GHz band for aero/ maritime operations, along with the 14 – 14.5 GHz band, will allow operators to meet the ever-growing demand for these services in Ku band. This is especially important in the Caribbean Region, where Tourism is one of the motors of the economy.
- A globally harmonized framework would allow aviation and maritime services, by nature global, to leverage economies of scale.
- Permitting this use will allow operators to offer seamless connectivity to customers/passengers in national and international airspace and waterways, regardless of location.



Updates to Draft CPM Report

- WP4A developed one method to satisfy this agenda included in the CPM report as Method B, which adopts a footnote to the table of allocation which references a draft new resolution.
- The draft new Resolution [A115] (WRC-23) contains technical, regulatory and operational conditions. Regarding the protection of existing services, including the AP30B Plan, the following measures are included in the Resolution:
 - Appendix 30B GSO networks (Annex 1): Regulatory procedure to be followed by administration and the BR, including examinations to fully protect the Appendix 30B Plan;
 - Terrestrial services (Annex 2): for earth stations on aircraft a PFD mask at Earth's surface and for earth stations on vessels a minimum distance to the low-water mark and maximum e.i.r.p. density towards horizon;
 - Non-GSO systems (Annex 3): New off-axis e.i.r.p. and on-axis e.i.r.p limits for the protection of Non-GSO systems.
- The draft resolution contains options for several areas that will be further discussed and resolved at the CPM.
- The draft resolution considers the use of ESIMs in national and international aerospace and waters



Agenda Item 1.15 in CITEI

- There is a Draft Inter-American proposal in CITEI for Agenda Item 1.15
 - The DIAP is supported by Mexico and Canada
 - The DIAP supports method B, but the regulatory text needs to be further developed
 - [GT-CMR23-2022-40-047r1](#)
- There are only 2 more PCC II meetings before WRC-23 where the American positions for all the Agenda Items must be defined
 - Mexico May 2023
 - Canada August 2023



OAS

More rights
for more people

- CITEU and CTU Members States should support allowing GSO ESIMs in the AP30B Ku-band. i. e. **Support Method B of the CPM text** at the next CPM-2 an.
 - This additional use will not affect or limit use of existing Appendix 30B allotments/assignments (Annex-1)
 - Will protect terrestrial services in the band (Annex-2)
 - Will impose operational limitations on the ESIMs for the protection of the NGSO systems (Annex-3)
- GVF recommends that CTU members support the current DIAP of MEX and CAN based on Method B and continue working on further developing the regulatory text.

WRC-23 Agenda Item 1.15

THANK YOU

GVF

Satellite. Solutions. The World.