NHK WORLD-JAPAN Distribution

~ Measures for 5G Interference ~

November 2020

NHK WORLD Department
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NHK WORLD-JAPAN

- NHK's 24/7 English speaking free-to-air channel
- Consists of news programs and lifestyle programs

Global Distribution


NHK/Tokyo


KDDI/Tokyo


KDDI/Yamaguchi

backbone

C-band
Intelsat-21


Intelsat Napa

C-band
Intelsat-19

C-band
Intelsat-20

Regional


Astra-1KR


Hotbird-13C


Galaxy-13


Asiasat-7

etc...

C-band
C-band


Local DTH

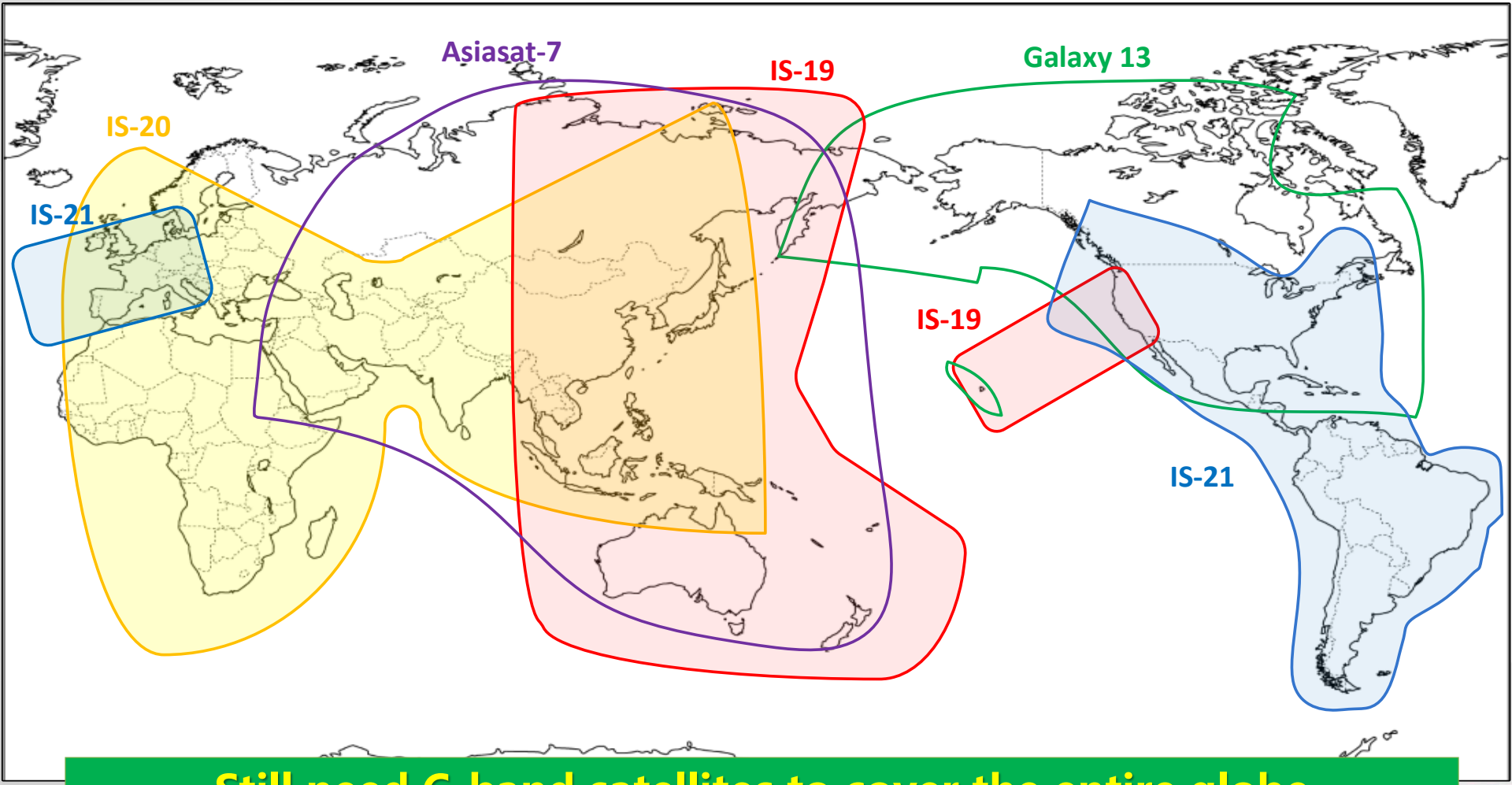

Households


Local
CATV/IPTV


Hotels

Five C-band satellites used as backbone sat. and regional sat.

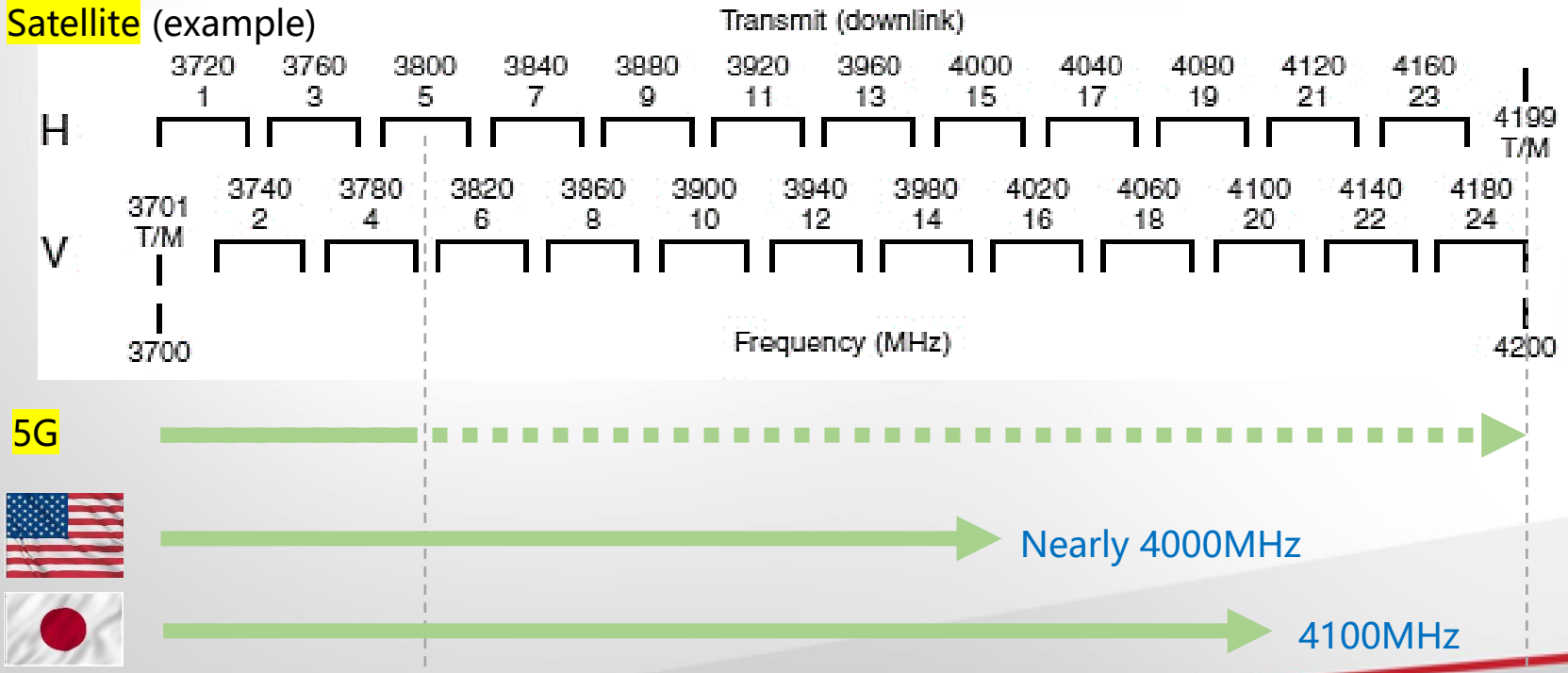
Coverage of C-band Satellites



Still need C-band satellites to cover the entire globe

5G Interference

- 5G is globally allocated up to 3,800MHz and higher in some countries
- C-band satellite uses 3,700MHz to 4,200MHz for its downlink
- Future possibility for severe interference from 5G in global basis



Measures Taken

- Three out of five C-band satellites needed a care
  - IS-19 : Downlink frequency was too low for Japan (5G is allocated up to 4100MHz)
  - IS-20 : Downlink frequency was too low entirely
  - Galaxy-13 : Downlink frequency was too low for the US

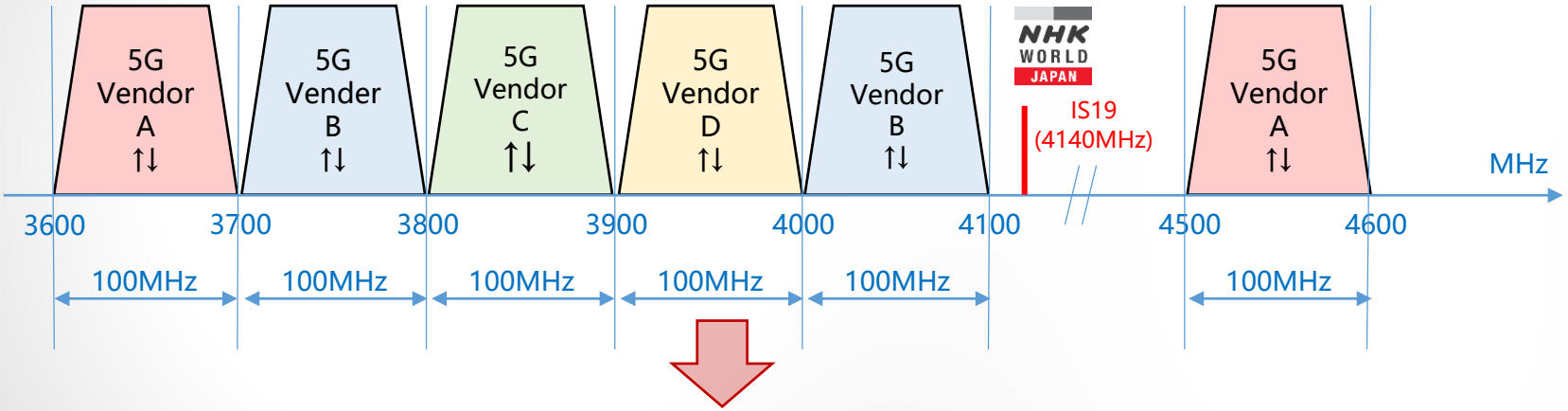
	Intelsat-19	Intelsat-20	Intelsat-21	Asiasat-7	Galaxy-13
D/L frequency	4140 MHz	3841 MHz	4160 MHz	4100 MHz	3780 MHz

- Different measures taken for these three satellites

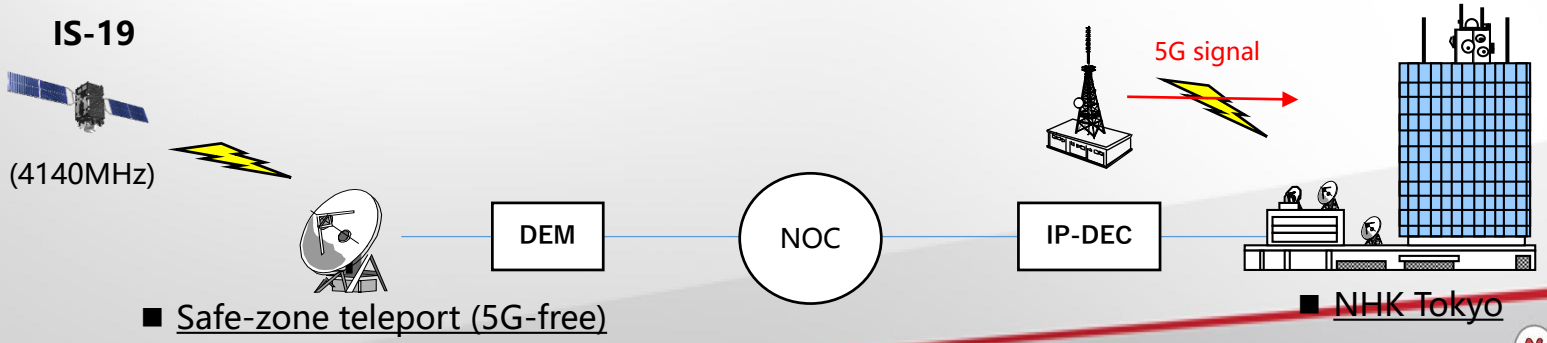
	Intelsat-19	Intelsat-20	Intelsat-21	Asiasat-7	Galaxy-13
Measures Taken	Receive stable signal from safe zone teleport	Migrate to higher frequency transponder	Non needed	Non needed	Migrate to terrestrial IP network

Measures Taken for Intelsat-19

- In Japan, NHK WORLD-JAPAN is being downlinked from IS-19
- High possibility of adjacent interference from Vendor-B's 5G signal



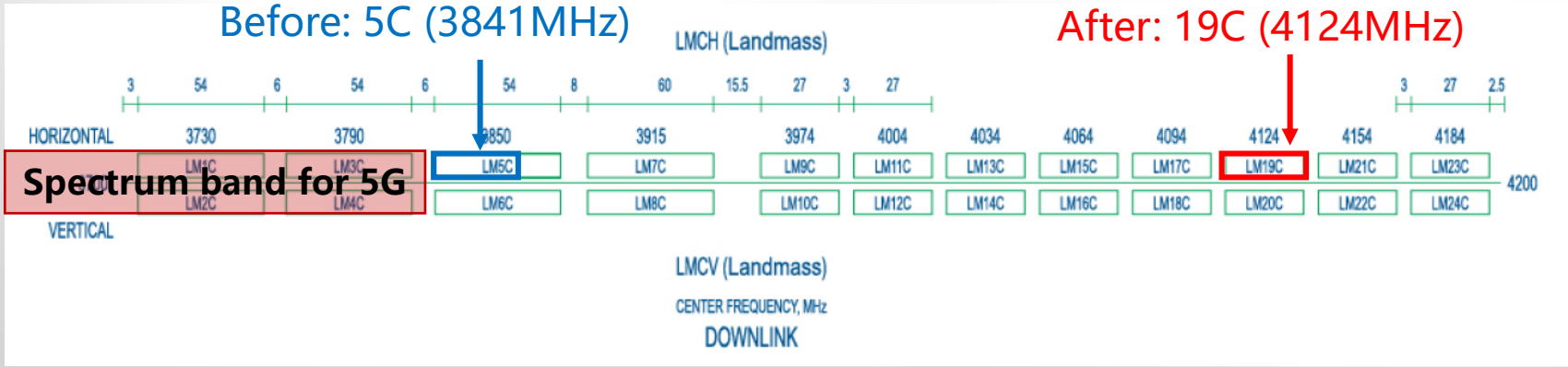
- 5G vendors agreed to provide stable downlink signal to broadcasters



Measures Taken for Intelsat-20

- IS-20 covers Europe, Middle East, Africa, and most part of Asia
- Large number of affiliates were receiving directly from IS-20
- Therefore, landline solution was not appropriate

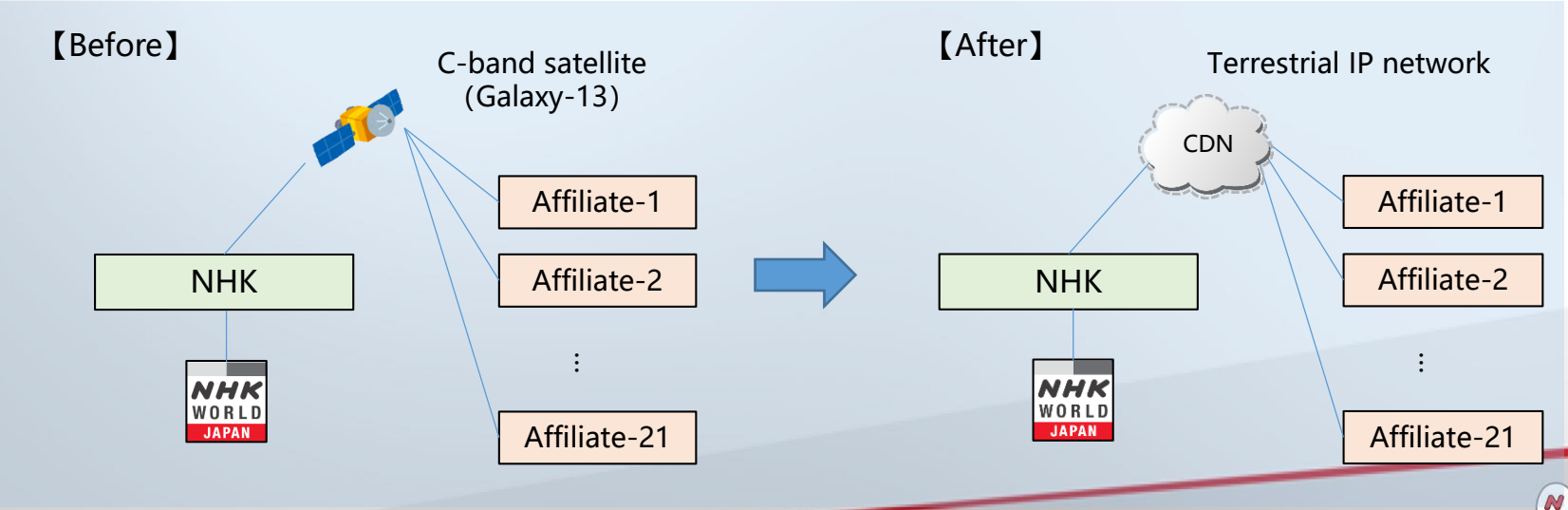
- Migrated transponder to higher frequency (5C to 19C)



Measures Taken for Galaxy-13

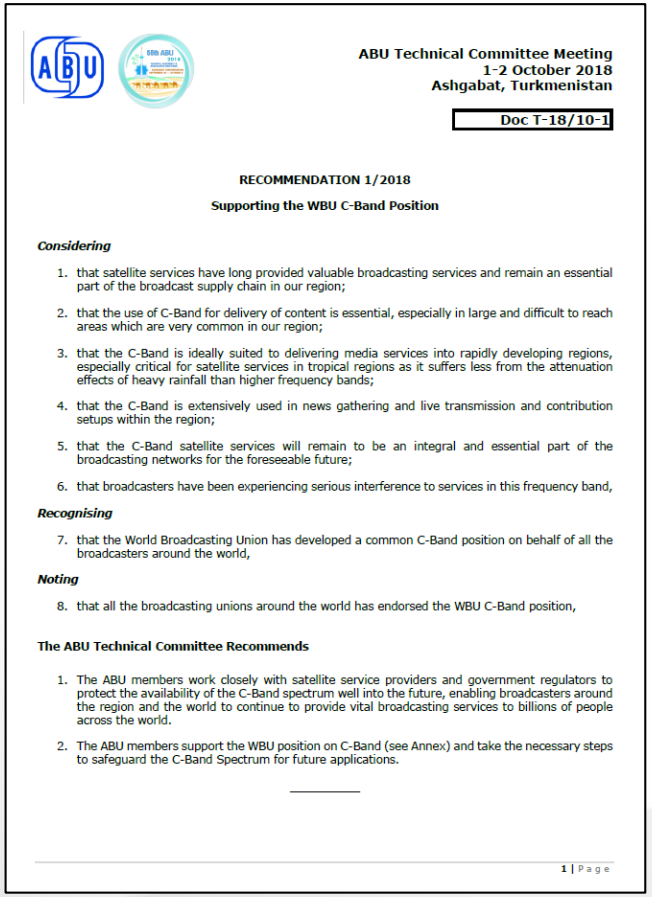
- Galaxy-13 covers the US
- Limited number of affiliates were receiving directly from Galaxy-13
- Therefore, landline solution was appropriate in this case

- Migrated from satellite to terrestrial IP network
- Last mile internet connection was the key for both reliability and cost



Summary

- Measures taken by NHK WORLD-JAPAN
  - Usage of safe-zone teleport
  - Migration to higher transponder
  - Migration to terrestrial network
- Depending on the situation, filter insertion may be effective
- ABU Technical Committee has issued Recommendation 1/2018 “Supporting the WBC C-band Position” which is to take necessary steps to safeguard the C-Band Spectrum for broadcasting



ABU Technical Committee Meeting
1-2 October 2018
Ashgabat, Turkmenistan

Doc T-18/10-1

RECOMMENDATION 1/2018

Supporting the WBU C-Band Position

Considering

1. that satellite services have long provided valuable broadcasting services and remain an essential part of the broadcast supply chain in our region;
2. that the use of C-Band for delivery of content is essential, especially in large and difficult to reach areas which are very common in our region;
3. that the C-Band is ideally suited to delivering media services into rapidly developing regions, especially critical for satellite services in tropical regions as it suffers less from the attenuation effects of heavy rainfall than higher frequency bands;
4. that the C-Band is extensively used in news gathering and live transmission and contribution setups within the region;
5. that the C-Band satellite services will remain to be an integral and essential part of the broadcasting networks for the foreseeable future;
6. that broadcasters have been experiencing serious interference to services in this frequency band,

Recognising

7. that the World Broadcasting Union has developed a common C-Band position on behalf of all the broadcasters around the world,

Noting

8. that all the broadcasting unions around the world has endorsed the WBU C-Band position,

The ABU Technical Committee Recommends

1. The ABU members work closely with satellite service providers and government regulators to protect the availability of the C-Band spectrum well into the future, enabling broadcasters around the region and the world to continue to provide vital broadcasting services to billions of people across the world.
2. The ABU members support the WBU position on C-Band (see Annex) and take the necessary steps to safeguard the C-Band Spectrum for future applications.

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