

# Regulatory Challenges in ESV Regulations

Broadband Maritime Conference  
Singapore, 23-24 February 2010

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# The Growth in ESV Deployment

- Rapid growth in ESV broadband installations;  
2003 - Approximately 500 Broadband ESVs worldwide  
2010 – More than 4500 Broadband ESVs worldwide using C- & Ku-band (probably more than 5000 units in L-band);

# Growth in ESV Deployment (2)

- Rapid growth in applications requiring ESV connectivity;
  - Back office connectivity for ship's business
  - Internet connectivity for passengers and crew
  - Video programming
  - Mobile telephony on board

# All of which leads to ...

- a dramatic increase in:
  - the number of ships equipped with broadband ESVs in C-, Ku- and L-band;
  - the demand for bandwidth;
  - the demand for global coverage; and,
  - the number of port visits in ports outside the country of ship registration.
- regulatory challenges to:
  - facilitate circulation of ESVs while preventing interference;
  - reduce the administrative workload; and,
  - insure compliance with regulations.

# ESV Regulatory Chronology

- 2003 – ITU-R Resolution 902 (WRC-03)  
ITU-R Rec. 37 (WRC-03)  
ITU-R Rec.'s S.1587, SF.1589,  
SF.1648, SF.1649, SF.1650
- 2005 – U.S. Regulations for ESVs  
FCC-04-286
- 2005 – European ESV Decisions  
CEPT/ECC Dec. (05)09 & (05)10  
CEPT/ECC Rep.'s 69, 91  
ETSI ENs 301 447, 302 340 & 301 843-6
- 2006 – CITELE PCC-II Resolution 33  
CITELE PCC.II/RES. 33 (VII-06)  
CITELE PCC.II/REC. 14 (VI-05)
- 2009 – U.S. Amended Regulations for ESVs  
FCC-09-63

# Market Growth Driving Broadband Requirements

- More global coverage;
- More bandwidth on demand;
- Less expensive equipment; and,
- More affordable service

# Meeting the Broadband Requirements

- New and more powerful satellites providing better global coverage and more throughput;
- Better network technology for bandwidth management;
- Reliable automatic beam-switching; and,
- Smaller, less costly ESV systems;
  - As small as 60 cm in Ku-band
  - Less than 2.4 m for C-band

# Related Applications

- Aircraft Earth Stations (AES)
- Vehicle-Mounted Earth Stations (VMES)
- Earth-Stations on Trains (EST)

All mobile, broadband applications that use the Fixed-Satellite Service.

# New & Expanded Applications Requires Regulatory Treatment

- Standards from internationally recognized bodies such as ETSI;
- Procedures and recommendations for the avoidance of interference (e.g. ITU-R recommendations);
- International & national regulations may need to be updated to accommodate these applications (e.g. antenna size constraints in Res. 902).

# Regional Harmonization

Regulatory Considerations  
Practical Arrangements

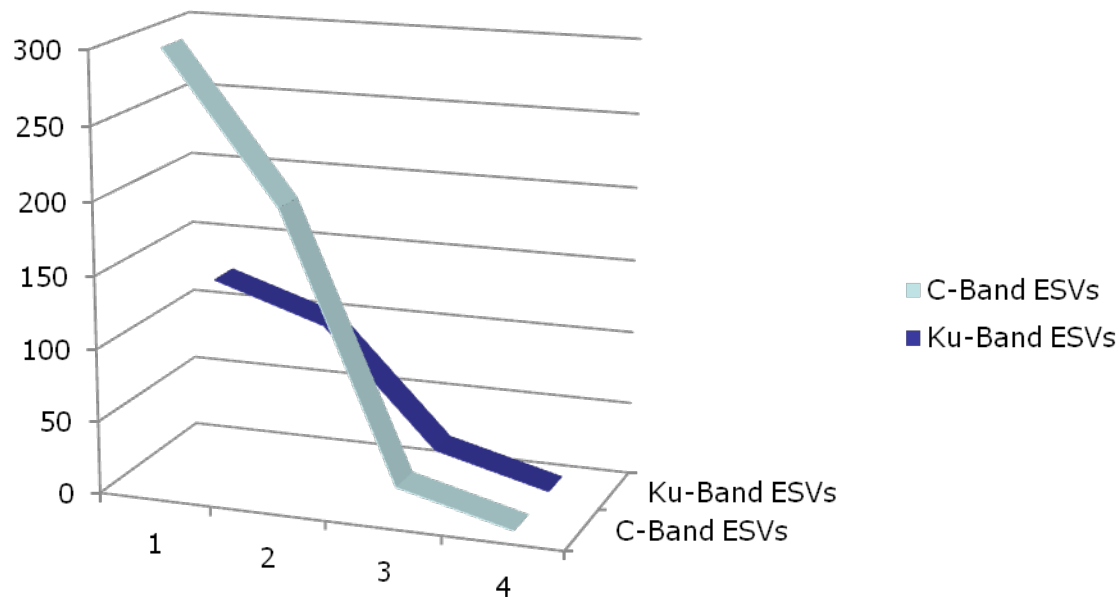
# Regional Harmonization: Regulatory Considerations

- National regulations should be harmonized with respect to the technical requirements of ITU-R Radio Regulations (e.g. Res. 902 (WRC-03)) and any regional regulatory directives (APT for this region);
- Regional directives protect the interests and the rights of all in the region and reduce administrative workload;
- Clear regional directives insure better compliance with regulations by ESV operators.

# Regional Harmonization: Practical Arrangements

- Authorization of national ESV networks and ESV terminals
  - Network vs. Terminal authorization
- Notification to other Administrations
  - Letter of compliance
- Frequency coordination (for shared bands)
  - Frequency avoidance
  - Interference criteria and assessment
- Special national requirements
  - Additional technical requirements
  - Exclusionary zones (e.g. radio telescopes)

# Regional Harmonization: Effect on Minimum Distance



# In Conclusion

- The demand for broadband services is growing rapidly in the maritime industry;
- Related applications for mobile earth stations operating in the FSS are also growing rapidly;
- Regional harmonization of the regulatory framework will allow the industry to grow without increasing the risk of interference and without burdening Administrations with unnecessary bureaucratic tasks.

# Thank you for your attention

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