# Small Cells Sharing with the Fixed Satellite Service in 3550-3650 MHz

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SATELLITE INDUSTRY ASSOCIATION

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# Overview

- C-band satellites provide vital services that must remain viable
- The C-band is uniquely suited for wide area satellite coverage and provides superior service availability that can't be matched in other bands
- To protect existing and future C-band services, separation distances will be required to address both in-band and adjacent band interference
- The domestic 3.5 GHz proposal should not dictate the U.S. position at WRC-15

# Satellite Investment in C-band

- Satellite companies have made – and are continuing to make – extensive investments in C-band satellites
  - At least 169 C-band satellites in geostationary orbit in 2012, representing investments of $42-51 billion
  - At least 69 of these operate in parts or all of the 3400-3700 MHz band, including 15 U.S.-licensed satellites
  - At least 35 satellites with C-band payloads are under construction and are scheduled to be launched in 2012-2015, representing $9-10 billion in investment

- The 3700-4200 MHz band (standard C-band) is heavily used in the United States and worldwide:
  - Media distribution to all 110 million U.S. TV households and around the world
  - Hundreds of well-known content brands, including CNN, Disney/ESPN, HBO/Turner, Fox, Viacom
  - U.S. government networks for the State Department and U.S. military
  - Iridium's backhaul feeder links for Northern Canada

- The 3600-3700 MHz band (extended C-band) is less used in the U.S., primarily due to regulatory restrictions, but is <u>extensively</u> used outside the United States:
  - In the U.S., the band is used to receive international satellite services
  - Worldwide, the band is also used for TT&C and feeder links for Inmarsat's mobile-satellite service system, which is used to support public safety and disaster relief missions
  - In North America, Mexico is building extended-C-band-only satellites, which are being manufactured by Orbital Sciences Corporation, a U.S. satellite manufacturer

# Protection of C-band FSS is Essential

- The FCC must ensure that any new operations in the 3550-3650/3700 MHz band do not:
  - disrupt existing and future co-frequency FSS networks OR
  - interfere with the thousands of FSS earth stations in the adjacent 3700-4200 MHz band
- Protecting C-band earth stations from interference requires substantial separation distances:
  - For in-band interference protection, between 21 and 138 km (for long-term criteria) and up to 487.0 km (for short-term criteria)
  - For out-of-band interference protection, up to 36.6 km
- Adding filters to receive earth stations would not reduce these required separation distances

# Making Sharing Work Fairly

- The FCC should lift the freeze on the deployment of additional FSS earth stations; since small cells are expected to "work around" incumbent services the freeze should never have been imposed
- New earth stations should receive the same protections as existing ones
- No small cell deployments should be authorized until:
  - A spectrum access system has been developed and tested in an operationally realistic environment, including through coordination with FSS earth stations
  - Reliable enforcement mechanisms have been established
- Given the global nature of satellite systems and differing band use around the world, this unique domestic proposal should not dictate the U.S. position on the C-band at WRC-15

# For more information, please contact:

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