Part 25 Rulemaking (IB Docket No. 12-267)
Potential NGSO FSS Issues

Meeting with FCC International Bureau
July 2015
Agenda

1. OneWeb Recent Developments
2. Part 25 Proceeding and NGSO FSS Issues
3. Proposal to Modify Section 25.209
4. Conclusions
1. OneWeb Recent Developments

- OneWeb – Bringing the Web to the World
  - Affordable broadband access for everyone...everywhere
  - Unique system concept, satellite design and production techniques
    - Large constellation of small satellites - maximizes coverage and capacity
    - Ku-band (user links)/Ka-band (gateways) - reliable broadband connectivity
    - Low-cost terminals with Wi-Fi and 3G/LTE hotspots - bridge the digital divide
    - Best-in-class satellite and ground segment technology partners

- OneWeb looks forward to working with the FCC.
OneWeb Partners – June 2015

JV Manufacturer

Launchers

Virgin Galactic
2. Part 25 Proceeding and NGSO FSS Issues

- OneWeb supports the ongoing review of the Part 25 rules.
- The current proceeding considers certain satellite and earth station licensing rules.
  - Extensive comments from various satellite operators and the SIA
  - Focus of technical input: GSO FSS earth station operations
  - NGSO technical issues limited to clarification of gateway earth station parameters
  - Unique policy and technical issues should be addressed separately (e.g., nanosats, picosats, etc.)
Part 25 Proceeding and NGSO FSS Issues

• The FCC’s rules (Section 25.146) do not currently contain specific Ku-band NGSO FSS antenna performance requirements, but rather allow system operators to declare antenna performance by demonstrating compliance with EPFD limits.

• A proposal has been made to modify Section 25.209 to apply GSO FSS technical antenna compliance standards to earth stations operating with primary NGSO FSS satellites.
  • This proposal (if adopted) would fundamentally alter the FCC’s licensing approach in Section 25.146.
3. Proposed New Section 25.209(d)

- The proposed new Section 25.209(d) would impose gain mask requirements for all earth stations operating with NGSO FSS satellites:

  “NGSO FSS earth stations operating on a primary basis, including NGSO FSS earth stations that serve as feeder links for non-FSS systems, but excluding NGSO FSS earth stations operating in the bands listed in (h) below, must demonstrate compliance in two orthogonal planes with the gain masks specified in (a)(2) and (b)(2) above.”

Section 25.209(h) states:

“(h)(1) The gain of any antennas to be employed in transmission from a gateway earth station antenna operating in the frequency bands 10.7-11.7 GHz, 12.75-13.15 GHz, …, and 14.4-14.5 GHz and communicating with NGSO FSS satellites shall lie below the envelope …” [emphasis added]
Proposed New Section 25.209(d)

- Neither U.S. nor international regulations impose minimum antenna performance standards on NGSO FSS terminals.
  - Existing standards were developed for GSO FSS terminals to protect both the GSO FSS satellite receivers and NGSO FSS operations.

- The proposal to impose antenna performance standards on NGSO FSS earth stations, through new Section 25.209(d), is a significant departure from Section 25.146, which governs Ku-band NGSO FSS licensing.
  - It negatively impacts NGSO FSS user terminal design and operations.
  - It is inconsistent with current Part 25 rules (e.g. Section 25.146).
  - It has no technical or policy foundation.
Suggested Resolution – Section 25.209(d)

- OneWeb believes that there may have been an oversight in the proposal to add a new Section 25.209(d) applicable to NGSO terminals.

- The Commission should either:
  - As the preferred option, reject the proposed Section 25.209(d), or
  - Restrict its applicability to NGSO FSS gateway earth stations:

  “NGSO FSS gateway earth stations operating on a primary basis, including NGSO FSS earth stations that serve as feeder links for non-FSS systems, but excluding NGSO FSS gateway earth stations operating in the bands listed in (h) below, must demonstrate compliance in two orthogonal planes with the gain masks specified in (a)(2) and (b)(2) above.”
Proposed modifications to Section 25.209(a)

• Additional revisions to Section 25.209(a) would effectively preclude non-conforming NGSO FSS terminal licensing under Section 25.209(f).

• We support the FCC proposal to resolve the ambiguity in section 25.209, as it was originally proposed, and do not believe that any further modification is necessary or advisable.
4. Conclusions

- Section 25.146 is appropriate and sufficient for Ku-band NGSO FSS earth station licensing.

- The FCC should either reject proposals to have a new Section 25.209(d) in its entirety, or limit the provision to NGSO FSS gateways, which should be able to meet such standards without unnecessarily constraining user terminal design.