

Before the  
**Federal Communications Commission**  
Washington, D.C. 20554

In the Matter of	)	
	)	
Allocations and Service Rules for the 71-76	)	WT Docket No. 02-146
GHz, 81-86 GHz, and 92-95 GHz Bands	)	
	)	
Loea Communications Corporation Petition for	)	RM-10288
Rulemaking	)	

**COMMENTS OF  
THE BOEING COMPANY**

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December 18, 2002

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The Boeing Company (“Boeing”), by its attorneys and pursuant to section 1.415 of the Commission’s rules, 47 C.F.R. § 1.415 (2001), respectfully submits its comments in response to the above-captioned Notice of Proposed Rule Making (“NPRM”) regarding allocations and service rules for the 71-76 GHz, 81-86 GHz, and 92-95 GHz frequency bands.<sup>1</sup>

**I. INTRODUCTION**

Boeing lauds the Commission on the prompt issuance of the NPRM to establish allocations and service rules for the upper millimeter-wave frequencies above 70 GHz in order to facilitate the development and deployment of high-speed satellite and fixed wireless point-to-point systems. As a leading manufacturer of state-of-the-art satellite communications systems and a developer of millimeter-wave technology applicable to fixed wireless applications, Boeing has a strong interest in a balanced outcome of this

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<sup>1</sup> See *Allocations and Service Rules for the 71-76 GHz, 81-86 GHz, and 92-95 GHz Bands*, WT Docket No. 02-146, Notice of Proposed Rulemaking (2002) (“NPRM”).

proceeding that would ensure both satellite and fixed wireless proponents equitable access to a large amount of spectrum to provide high throughput, multi-gigabit communications systems capable of complementing and/or competing with fiber technology.

## **II. THE COMMISSION SHOULD FACILITATE IMPLEMENTATION OF HIGH-SPEED SATELLITE AND FIXED WIRELESS SYSTEMS IN THE 71-76 GHz FREQUENCY BAND**

Boeing fully supports the Commission's proposal to remove the Amateur and Amateur-Satellite Services co-primary allocations from the 75.5-76 GHz band,<sup>2</sup> and to allocate the same band to Fixed and satellite services on a co-primary basis.<sup>3</sup> Boeing agrees with the FCC that in place of the 500 MHz of spectrum in the 75.5-76 GHz band, the Amateur and Amateur-Satellite Services can operate in the same amount of contiguous spectrum in the nearby 77.5-78 GHz band, which was allocated to the above two amateur services over four years ago.<sup>4</sup> Boeing also supports the Commission's proposal to remove the Radio Astronomy Service allocation from the 72.77-72.91 GHz band (footnote US270 of the domestic Table of Frequency Allocations, 47 C.F.R. § 2.106).<sup>5</sup>

Boeing supports the Commission's proposal to allocate the entire 71-76 GHz band to the downlink Fixed-Satellite Service;<sup>6</sup> however, Boeing recommends that the FCC allocate the 71-73 GHz band to the Broadcasting-Satellite Service ("BSS") and the 73-76 GHz band to the downlink Mobile-Satellite Service ("MSS"). This is consistent

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<sup>2</sup> *Id.* at ¶23.

<sup>3</sup> *Id.* at ¶20.

<sup>4</sup> See *Amendment of Parts 2, 15, and 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications*, ET Docket No. 94-124, *Third Report and Order*, 13 FCC Rcd 15074 (1998).

<sup>5</sup> See *NPRM* at ¶20.

<sup>6</sup> *Id.* at ¶20.

with the Commission's proposal to allocate 2 GHz of bandwidth to the BSS and 3 GHz to the downlink MSS.

**III. THE COMMISSION SHOULD ADOPT BAND PLANS AND SHARING REGIMES THAT WOULD FACILITATE FIXED AND SATELLITE HIGH-SPEED DIGITAL DATA TECHNOLOGIES TO COMPLEMENT AND/OR COMPETE WITH FIBER TECHNOLOGY**

Boeing recommends the Commission adopt band plans and sharing regimes that would allow multiple users, Federal and non-Federal alike, to have access to 3 GHz or wider of technically unique, contiguous spectrum, i.e., spectrum with propagation characteristics that would allow small antenna apertures to produce high gains and narrow beamwidths, in the 71-76 GHz, 81-86 GHz, and 92-95 GHz bands so that diverse technologies could reuse the same scarce spectrum to meet the public's numerous needs in rural, suburban, as well as urban areas.

**A. The Commission Should License Entire Bandwidths of the 71-76 GHz, 81-86 GHz, and 92-95 GHz Bands as Maximum Authorized Bandwidths to Both Fixed and Satellite Operators**

As proposed in Boeing's comments to the Petition for Rulemaking filed by Loea Communications Corporation ("Boeing Comments to Loea Petition"), Boeing strongly supports the proposals to license the entire bandwidth available in the 71-76 GHz, 81-86 GHz, and 92-95 GHz bands so that fiber-like data transmission rates could be achieved with satellite and fixed wireless systems to complement and/or compete with fiber.<sup>7</sup> To permit digital data transmissions at rates as high as 10 Gbps, terrestrially or via satellite, segmentation of the upper millimeter-wave frequencies above 70 GHz should be

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<sup>7</sup> See *Comments of the Boeing Company to Petition for Rulemaking* at 4, RM-10288 (filed October 29, 2001) ("*Boeing Comments to Loea Petition*").

avoided.<sup>8</sup> Furthermore, segmented bands below 70 GHz are still available for fixed and satellite services.<sup>9</sup> These bands should be sufficient in meeting the needs of narrower bandwidth uses.

**B. The Commission Should Mandate Efficient Spectrum Use by Facilitating Sharing Among Co-Primary Services and Between Federal and Non-Federal Services**

Boeing believes it is premature to adopt satellite downlink PFD limits in the upper millimeter-wave frequencies above 70 GHz at this time because any limits would undoubtedly constrain the development of satellite services, which may not be implemented on a commercial scale for some time. The FCC should permit satellite and fixed interests to perform studies on sharing between satellite and fixed systems in order to determine whether PFD limits should be developed for Federal and non-Federal (geostationary and non-geostationary) satellite systems to protect fixed receive stations from satellite downlink transmissions in the 71-76 GHz frequency band. The FCC should also permit additional studies to consider protection and/or coordination criteria for Federal and non-Federal satellite receive earth stations vis-à-vis fixed transmit stations operating in the same band.

Boeing supports the adoption of fixed wireless allocations and service rules in the near term to permit prompt usage of the upper millimeter-wave frequencies above 70 GHz. As evident in the 40 GHz band, commercial fixed millimeter-wave systems can typically be developed and deployed sooner than commercial satellite millimeter-wave systems. Thus satellite receive earth stations operating in these bands could potentially be blocked from large and/or densely populated geographic areas where fixed stations could

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<sup>8</sup> *Id.* at 5.

<sup>9</sup> *Id.* at 6.

establish early operations. As a result, Boeing supports the domestic adoption of a modified footnote 5.561 to be applicable to the entire 71-76 GHz frequency band to protect both Federal and non-Federal satellite receive earth stations from earlier deployment of fixed stations in this upper millimeter-wave spectrum.<sup>10</sup> The modified footnote 5.561 would read as follows:

USwww In the 71-76 GHz band, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to stations of the fixed-satellite service, stations of the mobile-satellite service, or stations of the broadcasting-satellite service operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

Boeing believes the spectrum needs of future Federal and non-Federal satellite operations in the upper millimeter-wave frequencies above 70 GHz will be identical as the Department of Defense's Transformation Strategy on "leveraging commercial satellite communications to the maximum extent possible" continues to provide benefits to the Department's Military Satellite Communications architecture.<sup>11</sup>

#### **IV. THE COMMISSION SHOULD LICENSE FIXED SYSTEMS ON A SITE-BY-SITE BASIS WITHOUT COMPETITIVE BIDDING**

Boeing recommends the Commission authorize the 71-76 GHz, 81-86 GHz, and 92-95 GHz bands on a site-by-site basis under Part 101 of the Commission's rules, rather than through geographic area licensing in conjunction with a competitive bidding

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<sup>10</sup> See *International Telecommunication Union Radio Regulations, Articles*, Footnote 5.561 of Article 5 (Edition of 2001) ("In the band 74-76 GHz, stations in the fixed, mobile and broadcasting services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite service operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service").

<sup>11</sup> See *Annual Report to the President and the Congress*, William S. Cohen, Department of Defense, p. 93 (2000). Also See *Special Briefing on the Opening of the Transformational Communications Office*, Undersecretary of the Air Force Peter Teets, DefenseLINK, United States Department of Defense (September 3, 2002) ("... DISA provides commercial connectivity. In fact, supporting our warfighters today, we've been able to increase the bandwidth through satellite communications into the Central Command region by 800 percent of what we started from on the 11th of September. So we provide that through commercial means, ...").

process.<sup>12</sup> Because of the extremely narrow beamwidths of the upper millimeter-wave signals, potential interference between fixed wireless systems should be easily avoided with coordination permitting many fixed licensees to successfully operate in the same geographic area.<sup>13</sup> As a result, Boeing believes mutual exclusivity among users should not arise and can be avoided.<sup>14</sup> Accordingly, there is no justification for auctions in these bands.

Additionally, Boeing cautions that the authorization of spectrum usage via geographic area licensing in conjunction with a competitive bidding process would impose additional and unnecessary costs on this new technology, which is still in its embryonic stage and facing an unproven market. These additional costs might delay or deter the use of under-utilized or un-utilized upper millimeter-wave spectrum. Boeing urges the Commission to assure achievement of its goal of promoting the “development and growth of the millimeter-wave spectrum”<sup>15</sup> by reducing the costs to deploy these fiber-like, high-speed digital data systems.

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<sup>12</sup> See *Boeing Comments to Loea Petition* at 6.

<sup>13</sup> *Id.* at 7.

<sup>14</sup> See 47 U.S.C. § 309(j)(6)(E) (“Nothing in this subsection, or in the use of competitive bidding, shall ... (E) be construed to relieve the Commission of the obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means to avoid mutual exclusivity in application and licensing proceedings.”)

<sup>15</sup> See *NPRM* at ¶1.

**V. CONCLUSION**

For the reasons set forth above, Boeing urges the Commission to ensure both satellite and fixed wireless point-to-point systems equitable access, without geographic area licensing through a competitive bidding process, to the technically unique 71-76 GHz, 81-86 GHz, and 92-95 GHz bands, which are capable of accommodating fiber-like data transmission rates with large amounts of contiguous bandwidths.

Respectfully submitted,

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