Because there is so much variation in factors from one coordination to the next, there is simply no reason to expect that adopting the requirement proposed in the *Notice* will benefit either satellite or terrestrial operators significantly. Instead, incorporating this procedure into the rules will simply interject an unnecessary constraint, limiting the flexibility of both sides in coordination discussions.

Even worse, it could lock in the use of a coordination model that might become outdated. Buildings are constructed and torn down, terrain features can be altered, and these changes would clearly be relevant to determining the potential for harmful interference between two stations.[38] The *Notice* seems to recognize the need to adapt coordination models to these types of changes in the interference environment (*see id.* at ¶ 79), but provides no procedure for accomplishing this.

Finally, the proposal raises other issues that the *Notice* does not address. For example, the *Notice* suggests that the results of any path analysis performed on behalf of an operator would be available to other satellite and terrestrial licensees and applicants in the surrounding area. However, these analyses are done only on specific request at the expense of the requesting operator or applicant. The *Notice* does not even discuss whether it is appropriate to require

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38 *See, e.g.*, HBO Opposition at 6:

> [The FWCC's] proposal ignores the very real instances where the environment around an earth station facility changes over time, as new radio interference sources are introduced, the terrain is altered by construction, and buildings are built and demolished. These real world changes are precisely the reason that careful coordination between earth stations and terrestrial facilities is necessary.

an entity that pays for a link analysis to make the information available to other operators in future coordinations.

In sum, the proposal with respect to interference models is not based on any factual evidence of an existing problem. The solution put forth is unnecessarily regulatory and overly simplistic given the wide range of factors that can affect any given interference analysis. The proposal does have the benefit of being even-handed, since if adopted it would apply to earth station and terrestrial operators alike, unlike the other proposals in the *Notice*. However, the Coalition believes it would benefit neither earth station operators nor terrestrial operators. Accordingly, the proposed rule should be rejected.

### B. The Commission Should Not Deny Future Protection to an Earth Station Operator that Has Agreed to Accept Limited Interference

The *Notice* also proposes that if an earth station in its initial coordination accepts a level of interference that "is recognized to be below accepted interference objectives" along a set of azimuths and elevation angles, then it would not be entitled to any future protection in the same frequencies for the same set of azimuths and elevation angles. *Notice* at ¶ 78. This proposal is also misguided and would be impractical to implement.

In explaining the underlying rationale of this proposed rule, the Commission states that:

> it would not seem reasonable to allow an FSS earth station licensee to preclude future FS station use of a part of the spectrum in which the earth station licensee has already accepted levels of interference

> from other FS stations that would preclude its use of that particular part of the spectrum.

*Id.* at ¶ 76. Thus, the Commission's proposal seems intended to address a situation in which an earth station operator has been forced to "write off" a portion of the spectrum due to interference from a pre-existing terrestrial operator but nevertheless attempts to deny coordination to a subsequent proposed use of that spectrum by another terrestrial applicant.

Again, however, there is simply no evidence that this is a problem under current procedures. Neither the FWCC nor any other commenting party in this proceeding to date has introduced any information to suggest that insistence by earth station licensees on protecting spectrum they cannot use is a common – or even an occasional – occurrence. Based on the experience of its members, the Coalition has no reason to believe that this is a significant problem. Thus, there is no justification for the rule change proposed.

Furthermore, the Commission's proposed solution is based on unsupported assumptions, and the *Notice* provides no guidance on how the new rule would be implemented. For example, the proposed rule would apply whenever an earth station accepts interference "that is recognized to be below accepted interference objectives . . . and therefore insufficient to clear the interference case." *Notice* at Appendix C, proposed § 25.203(e)(3). This seems to assume that there would be a common understanding of "accepted interference objectives" that would be uniform for every earth station. But that is simply not the case. The amount of interference that might be accepted on a given frequency without making that

frequency unusable will vary from situation to situation, depending on a wide range of factors including the types of services being offered by the earth station and a myriad of technical parameters. As a result, no one-size-fits-all standard would be appropriate.

The *Notice* seems to nevertheless assume that a frequency coordinator would be in a position to determine whether a given frequency has been rendered unusable due to interference from a prior licensee. Yet the *Notice* supplies no framework for the coordinator to apply in order to make this decision.

Finally, as the *Notice* recognizes, the interference impact of any given fixed service installation on an earth station operator's use of frequencies is specific to the technical parameters in a given case. Thus, even when interference from an existing fixed station is substantial, the impact of the interference is limited to a given set of azimuths and elevation angles. A small difference in the location of the fixed station may have a significant impact on the interference effect. As a result, the proposed rule would only come into play when a subsequent fixed operator seeks to use the same frequency within the same set of azimuths and elevation angles.

This limitation is clearly appropriate given the realities of the interference environment faced by earth station operators. However, it suggests that the occasions in which the rule will even be relevant will be quite limited.

## IV. THE HUGHES PROPOSAL FOR BLANKET LICENSING OF 18 GHz TERMINALS IN SHARED SPECTRUM SHOULD BE ADOPTED

The Satellite Industry Coalition supports the proposal made by Hughes that the Commission adopt a licensing approach to facilitate the ubiquitous deployment of GSO FSS earth terminals in the Ka-band spectrum shared with FS systems. As the Commission is well aware, the Ka band represents the "next frontier" for the GSO FSS, and will support a new class of high-speed broadband service, deployed by satellite on a ubiquitous basis, to end-users throughout the United States. The launch of a single Ka band satellite will instantly offer the promise of high-speed connectivity to nearly every part of the U.S., even those parts that never may be served by DSL, cable modems, fiber optics, or other high speed terrestrial services.

To facilitate the prompt provision of service to those end-users, the Coalition urges the Commission to consider the least burdensome earth station licensing procedures possible. In particular, blanket licensing of GSO FSS earth stations throughout the 18 GHz bands would obviate the need for a separate earth station license for each individual terminal. Thus, it would reduce the regulatory burden on both the earth terminal applicant and the FCC and also would greatly facilitate the provision of broadband satellite service to the public.

It is significant that the Commission already has in place a comprehensive regime to govern the routine licensing of earth terminals at Ka band. Based on an industry recommendation, the Commission has adopted at Section 25.138 of its Rules various operational parameters that ensure compliance

with the Commission's two-degree orbital spacing policies for Ka band GSO spacecraft, such as downlink PFD and uplink off-axis EIRP values. These parameters are the basis for the routine licensing of GSO FSS Ka-band earth stations. Those rules enable the routine licensing of ubiquitous earth terminals in the other parts of the Ka band designated for the GSO FSS on a sole primary basis (28.35-28.6 GHz, 29.5-30.0 GHz, 18.58-18.8 GHz, and 19.7-20.2 GHz). The industry working group that recommended those parameters concluded that they would be equally applicable in any part of the Ka band in which the Commission permits blanket licensing. Thus, the technical bases for permitting blanket licensing throughout the 18 GHz band have already have been established.[39]

Moreover, this proposal is consistent with long-established Commission policies that have allowed blanket and streamlined licensing in other bands for many years. Those highly-successful licensing approaches have been instrumental in facilitating the growth of satellite services in the C and Ku bands, by shortening the licensing process, eliminating the need for operators to submit and for the Commission to consider redundant information, and reducing the regulatory burden on both the Commission and end users of satellite services. Wherever it can do so, the Commission should facilitate the issuance of a single license to cover large numbers of technically-identical earth terminals, rather than requiring the filing of multiple applications and the issuance of duplicative authorizations.

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[39] Appropriate modifications to Section 25.138 would be required.

This proposal also reflects the fact that satellite terminals operate at 18.3-18.58 GHz only in the "receive mode." These terminals do not transmit in these frequencies and, thus, they are not capable of causing interference to terrestrial users in this band. In recognition of the fact that earth terminals cannot cause interference when they receive, and as part of a general trend toward deregulation, the Commission decided [almost twenty years] ago that it no longer would license receive-only terminals. Rather, when those terminals operate in receive bands that are shared terrestrially, such as the C-band, Commission Rules provide the earth terminal user with an *option* to *voluntarily coordinate* with terrestrial users and/or to *voluntarily register* the satellite antenna for frequency protection.

In short, the proposals from Hughes take into account relevant regulatory considerations and provide a mechanism that facilitates expeditious deployment of earth terminals, and an option to register the receive band for interference protection from terrestrial users.

The Coalition also supports the proposal that the Commission adopt a suitable fee for a blanket license earth terminal application. The Commission will need to adopt a blanket license application fee for Ka-band earth terminals in the 29.5-30.0, 28.35-28.6, 18.58-18.8 and 19.7-20.0 GHz bands, and the fee should be the same for terminals operating in other Ka-band spectrum. Of course, any subsequent and optional frequency registrations in the shared 18.3-18.58 GHz band would require additional filings with the Commission. Taking into account the fact

that the processing of those registrations should be routine and non-controversial, as it is with C-band today, the Coalition endorses the proposal that the Commission adopt a "batch" fee that would allow a number of terminals to be registered together for a single fee. Moreover, adopting a low "batch fee" will facilitate the broadest possible distribution of these advanced broadband terminals and reduce costs to end-users.

## CONCLUSION

For the reasons set forth above, the FWCC proposals for changes in the licensing and coordination of earth stations, as modified and proposed in the *Notice*, are unnecessary and counter-productive and should be rejected. The Coalition, however, urges the Commission to adopt the Hughes proposal for streamlined licensing of 18 GHz terminals.

Respectfully submitted,

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January 8, 2001

# INDUSTRIES ENABLED BY THE SPACE SECTOR

Satellite capabilities enable any number of key industries in the U.S. and world economies. Satellite communications, navigation, and remote sensing abilities contribute to the more than *$1.7 trillion dollars* in annual revenues generated in the industries detailed below. Satellites expand the infrastructure for such services as international telephone trunking, Internet content delivery, and even banking and they play primary roles in the distribution of broadcast television, cable content, and direct-to-home satellite programming to both intermediate (broadcast and cable TV) and end users. At the same time, satellite navigation is impacting such industries as freight trucking with advanced asset management tools that increase productivity and reduce costs. Imaging satellites facilitate the prediction of climate conditions and weather patterns, benefiting agriculture, construction, and many other industries. Whether as directly in the form of satellite home services, or more indirectly through productivity enhancements, the space sector has a significant effect on U.S. and world economic output.

Although, satellites' impact on world markets go beyond the industries presented here, the data collected below represent some of the most significant economic sectors affected by satellite technology. (Unless otherwise indicated, the below industry classifications and size estimates are drawn from the U.S. Census Bureau's *1997 Economic Census* and its North American Industry Classification System (NAICS). The U.S. Census Bureau performs the economic census every five years. Some industries as presented below may overlap due to variations in source data estimating techniques.)

Industry Revenues ($B)

## Broadcast and Telecommunications (1997, U.S.)

| | |
|---|---|
| Telephone* | $ 209 |
| Broadcast television* | $ 30 |
| Pay-TV television (cable and DTH)* | $ 45 |
| Radio broadcasting* | $ 11 |
| Mobile messaging* | $ 17 |

The broadcast and telecommunications sector relies heavily on satellites as an integral element of a broad distribution infrastructure. Today, almost 3 billion minutes of international telephone traffic are carried over satellite and many countries depend on satellites to provide telephone backbone within their borders. Nearly all broadcast and cable television channel content is sent via satellite to local affiliates and cable providers. New avenues of pay-TV distribution, such as direct-to-home satellite TV, rely solely on satellites to deliver their product to the end user. Syndicated radio shows also use

* Industry size estimates do not include revenues associated with the transmission of information over satellite. The NAICS classification system records this segment separately under "Satellite Communications," NAICS code 513340.

satellites to deliver their content to local stations; beginning in 2001, digital radio content will be beamed directly to mobile end users in their cars and homes. National and international mobile messaging systems, such as coast-to-coast pagers, use satellites as the primary backbone to transmit their messages.

Industry Revenues ($B)

| Information Services (2000, U.S.)[1] | |
|---|---|
| Internet access | $ 35 |
| Internet content streaming | $ .04 |
| Internet content caching | $ .50 |
| Business-to-business e-commerce | $ 251 |
| Business-to-consumer e-commerce | $ 33 |

Satellites are a critical element of the Internet infrastructure. Depending upon the country and its level of terrestrial infrastructure, satellites deliver anywhere from 10% (the United States) to over 90% of downloaded content. Satellites are uniquely suited to point to multipoint broadcasting of Internet content (i.e. streaming and caching), and will continue to play a key role in these industries, which some analysts forecast will comprise a market valued well over $50 billion by 2010.[2] E-commerce solutions rely on the Internet infrastructure to increase business revenues and sales opportunities. The Internet relies, in turn, on satellites as part of an integrated infrastructure to deliver content and enable e-commerce sales worldwide.

Industry Revenues ($B)

| Transportation (1997, U.S.) | |
|---|---|
| Trucking | $ 88 |
| Air transportation | $ 20 |
| Deep sea freight and passenger transportation | $ 15 |

The fleet of satellites maintained by the U.S. government and known as the "Global Positioning System (GPS)" has both generated new markets and contributed to enhanced productivity and business opportunities for established industries. In addition to an $8 billion American market for direct GPS consumer equipment and services, national and international markets rely on GPS capabilities to enhance their productivity and business model. Trucking fleets now incorporate GPS devices paired with satellite transmitters that allow central offices to monitor and track the location of the entire fleet with real-

[1] Internet access revenues are estimates drawn from Ovum Ltd, *Ovum Forecasts the Internet and E-commerce*, 2000. Internet streaming market estimate for 2000 taken from Vision Consultancy, *Opportunities in Streaming Media*, 2000. Year 2000 e-commerce revenues taken from http://www.nua.ie/surveys/analysis/graphs_charts/comparisons/ecommerce_us.html. Year 2000 caching estimates derived from figures found in http://www.irgintl.com/news/press8-17-99.shtml (accessed 13 November 2000)

[2] Ovum.

time data. Air and sea transportation use GPS as a navigational aid, cutting down on route deviations, increasing navigational safety, and saving carriers money on reduced fuel expenses.

| Industry Revenues ($B) | |
|---|---|
| Agriculture (1997, U.S.)[3] | $ 197 |

Satellite technology has a significant impact on the productivity of the agricultural sector in the United States. Remote imagery and data readings from satellites help weather forecasters predict regional and local weather patterns, which farmers then use to understand transient intervention requirements such as irrigation, frost protection, and pest deterrence. Satellite sensing data is also used to characterize farmland features such as mineral content, moisture level, and soil type. Farmers use this knowledge to guide them in choices such as crops, fertilizing requirements, and drainage needs.

| Industry Revenues ($B) | |
|---|---|
| Financial Services (1997, U.S.) (Consumer & Commercial) | $ 809 |

Satellites are part of the telecommunications infrastructure that allows financial institutions to enact real-time international transactions. Either as part of the transoceanic communications backbone, or as private networks that use dedicated equipment and satellite capacity, the on-orbit presence of satellites increased productivity by enhancing the ability of banks and financial institutions around the world to complete transactions almost instantaneously.

[3] 1997 market value of agricultural products sold taken from U.S. Department of Agriculture, *1997 Census of Agriculture*, 1997.