

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

In the Matter of: )  
 )  
Expanding Flexible Use in Mid-Band Spectrum ) GN Docket No. 17-183  
Between 3.7 and 24 GHz )  
 )

**REPLY COMMENTS OF  
THE NATIONAL ASSOCIATION OF BROADCASTERS**

**I. INTRODUCTION AND SUMMARY**

The National Association of Broadcasters (NAB)<sup>1</sup> agrees with commenters emphasizing the need for a careful and cautious approach in considering appropriate ways to expand spectrum opportunities in this proceeding. The record reflects that the C-band, as well as the 6.5 GHz and 7 GHz Broadcast Auxiliary Service (BAS) bands, are currently subject to extensive use. In particular, the record demonstrates that mobile use in the C-band cannot be accommodated based on geographic separation without creating harmful interference and undermining the value of the band. Virtually every U.S. television and radio household relies on C-band satellite operations for content distribution in some manner. The Commission should take care to ensure that decisions impacting tens of millions of television and radio households are based on sound technical analysis and are carefully considered.

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<sup>1</sup> The National Association of Broadcasters is a nonprofit trade association that advocates on behalf of free local radio and television stations and broadcast networks before Congress, the Federal Communications Commission and other federal agencies, and the courts.

## II. THE RECORD DEMONSTRATES THE NEED FOR PROTECTION FOR THE C-BAND

NAB agrees with those commenters noting that the C-band is used extensively in for content distribution. In their comments, the Content Companies note that the C-band is presently used to deliver television programming to thousands of MVPD head-ends as well as over 1,000 broadcast television stations affiliated with national networks.<sup>2</sup> Content providers also rely on the C-band to deliver content to over-the-top service providers.<sup>3</sup> Further, cable system operators have stated that, despite the expansion of fiber networks, “C-band earth stations remain a primary means of receiving content for distribution to customers.”<sup>4</sup>

Radio content also relies heavily on dependable access to the C-band. National Public Radio has stated that the public radio system depends on the C-band, “for reliable distribution of programming to the 475 public radio earth stations that together broadcast public radio programming to 42 million Americans each week.”<sup>5</sup> C-band satellites are uniquely suited for the delivery of programming nationwide because they are “resistant to rain fade and capable of covering large areas, enabling coast-to-coast coverage with high availability.”<sup>6</sup>

The record also demonstrates that the availability of reasonable, practical alternative means of content delivery, such as fiber, are significantly overstated. We agree with those

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<sup>2</sup> Comments of the Content Companies at 2, GN Docket No. 17-183 (Oct. 2, 2017).

<sup>3</sup> *Id.*

<sup>4</sup> Comments of NCTA – The Internet & Television Association at 3, GN Docket No. 17-183 (Oct. 2, 2017).

<sup>5</sup> Letter from Adam Shoemaker to Marlene H. Dortch, GN Docket No. 17-183 (Nov. 8, 2017).

<sup>6</sup> Comments of the Satellite Industry Association at i, GN Docket No. 17-183 (Oct. 2, 2017) (SIA Comments).

commenters noting that, “substitute modes of delivery are non-existent or inefficient.”<sup>7</sup> Even in areas where fiber is available, it is not an economically viable alternative.<sup>8</sup>

Further, commenters have demonstrated that C-band satellites serve vital national security and public safety functions. The U.S. Army, the U.S. Navy, the National Oceanic and Atmospheric Association, the Federal Aviation Administration and others rely on C-band satellites for dependable communications functions for which substitutes are not readily available.<sup>9</sup>

The record also demonstrates the need for the Commission to take account of the full use of the C-band by considering thousands of receive-only earth stations currently operating in accordance with Commission rules.<sup>10</sup> The rules do not require registration of these stations, which means the FCC currently lacks an accurate picture of the full use of the C-band, both in terms of the number of stations operating and their location.

In short, the C-band provides broad, reliable coverage, including in rural areas, that supports important services upon which consumers and government agencies rely. These services reflect tens of billions of dollars of investment that could be put at risk by allowing expanded operations in the band. Accordingly, in considering any proposal for expanded terrestrial use of the C-band, the Commission must rely on thorough and sound technical analysis, not on unfounded assumptions that alternatives exist or will develop. As a practical

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<sup>7</sup> Comments of the American Cable Association at 16, GN Docket No. 17-183 (Oct. 2, 2017).

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

<sup>9</sup> SIA Comments at 10-14.

<sup>10</sup> *Id.* at 18-19.

matter, this means the Commission should acknowledge that terrestrial users, particularly mobile users, cannot share C-band frequencies based on geographic separation alone.

As commenters have explained, earth stations must be designed to reliably capture highly attenuated signals from satellites more than 22,000 miles away.<sup>11</sup> Accordingly, these facilities are extremely sensitive and highly vulnerable to terrestrial interference. Significant separation distances, ranging from tens or, under extreme circumstances, even hundreds of kilometers, would be required to ensure that fixed terrestrial signals do not prevent reliable reception of satellite downlinks.<sup>12</sup>

Mobile operations in particular cannot be authorized in the same frequency band as existing C-band operations. Any user with a mobile device could easily travel near an earth station. Even though base stations could be excluded from operations in the area, the user's mobile device would continue to attempt to make contact with a base station – and those attempted uplink transmissions could cause harmful interference to nearby earth stations. Because there is no reliable means of geofencing mobile users or mobile handsets from operation in exclusion zones, mobile operations in particular are fundamentally incompatible with existing use of the C-band. The Commission cannot authorize mobile operations in the same frequency band without creating widespread harmful interference that will disrupt television and radio service for tens of millions of Americans and upend billions of dollars in investment.

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<sup>11</sup> *Id.* at 36.

<sup>12</sup> ITU-R S.2368, “Sharing studies between IMT-Advanced systems and geostationary satellite networks in the fixed-satellite service in the 3400-4200 and 4500-4800 MHz frequency bands,” available at: [https://www.itu.int/dms\\_pub/itu-r/opb/rep/R-REP-S.2368-2015-PDF-E.pdf](https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-S.2368-2015-PDF-E.pdf).

### III. THE RECORD DEMONSTRATES THE NEED TO PROTECT EXISTING USERS OF THE 6.5 AND 7 GHz BANDS

NAB agrees with commenters stating that unlicensed operations in the 6425–6525 MHz (the “6.5 GHz band”) and 6.875–7.125 GHz band (“7 GHz band”) bands will pose an unacceptable risk of harmful interference to existing operations in those bands. Broadcasters use both of these bands extensively, and there is no practical means of coordinating unlicensed operations in these bands without creating a high likelihood of harmful interference.

Individual broadcast stations, programming networks, and video production companies routinely use the 6.5 GHz band for electronic news gathering (ENG) and wireless video links.<sup>13</sup> These operations take place throughout the country, including in remote areas with nonexistent or unreliable mobile coverage or internet access. Use of this band to cover news events frequently cannot be coordinated or planned in advance with respect to either location or time. Potential sharing in this band is further complicated because broadcast uses typically are unidirectional, often with a path length of dozens of miles between a transmitter and receiver.<sup>14</sup> Accordingly, unlicensed or uncoordinated operations could easily be unable to detect the broadcast transmitter *while still causing interference to its associated receiver*. Further, as NAB noted in its original comments and as other commenters have demonstrated, there are thousands of transmitters that are not individually licensed by the FCC but that

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<sup>13</sup> Comments of the IEEE Broadcast Technology Society at 2, GN Docket No. 17-183 (Nov. 2, 2017) (IEEE Comments).

<sup>14</sup> *Id.*

broadcasters, networks and other entities rely on under the provisions of Section 74.24 of the Commission's rules.<sup>15</sup>

Broadcasters also make extensive and routine use of the 7 GHz band for fixed point-to-point links and mobile and temporary operations. Further, as NAB noted in its comments, the Commission has already proposed expanded operations in this band, identifying the band for use by wireless microphones as a partial substitute for loss of access to significant portions of the UHF Television band.<sup>16</sup> We urge the Commission to consider expanded sharing only based on specific technical characteristics of potential new operations and only based on accurate information regarding incumbent operations.

To that end, NAB agrees that existing approaches to coordinating unlicensed sharing of these bands will fail to protect incumbent operations. First, well-documented inaccuracies in the white spaces database thoroughly demonstrate the inadequacy of such an approach to spectrum sharing without significantly expanded safeguards.<sup>17</sup> Given the ongoing failure of the white spaces database, and the fact that the Commission has yet to act on an industry-brokered compromise to resolve these issues,<sup>18</sup> there is no basis to believe a database approach can be successfully implemented.

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<sup>15</sup> *Id.*

<sup>16</sup> Report and Order, GN Docket 14-166, "Promoting Spectrum Access for Wireless Microphone Operations," Adopted August 5, 2015.

<sup>17</sup> Emergency Motion for Suspension of Operations and Petition for Rulemaking, RM-11745 (March 19, 2015); Letter from Patrick McFadden to Marlene H. Dortch, RM-11745, ET Docket No. 14-165 (June 25, 2015); Letter from Patrick McFadden to Marlene H. Dortch, ET Docket No. 16-56 (July 15, 2016); Letter from Patrick McFadden to Marlene H. Dortch, ET Docket Nos. 16-56, 14-165 (Nov. 17, 2016).

<sup>18</sup> Letter from Haiyun Tang, Adaptrum, Inc.; James Carlson, Carlson Wireless Technologies, Inc.; Larry W. Koos, Koos Technical Services, Inc.; Jordan Du Val, MELD Technology, Inc.; and Rick Kaplan, National Association of Broadcasters, to Julius P. Knapp, Chief, Office of Engineering and Technology, RM-11745 (filed Jul. 17, 2015); see also *Amendment of Part 15 of the Commission's Rules for*

Second, NAB agrees that Dynamic Frequency Selection (DFS) is ineffective and unreliable for preventing interference.<sup>19</sup> In theory, DFS operates through a device listening for authorized transmissions and not transmitting if it detects such transmissions.<sup>20</sup> DFS has repeatedly and demonstrably failed to prevent interference to FAA radars and weather radars used by TV stations over the course of several years.<sup>21</sup> The FCC's experience with DFS plainly demonstrates that the technology is wholly inadequate to protect licensed services, and FCC enforcement has not resolved these issues. There is no basis for believing that DFS will become an effective means for sharing spectrum in the near term, and the Commission should not authorize expanded operations based only on an assumption that the technology will at some point improve.

#### **IV. CONCLUSION**

The C-band is subject to extensive use across the country, reflecting tens of billions of dollars in investment. It plays a critical role in content distribution to tens of millions of Americans, and there are no substitutes available that are reliable and economically viable. Broadcasters also make extensive use of the 6.5 GHz and 7 GHz BAS bands for program distribution, electronic news gathering, and other purposes. Any consideration of expanded operations in these bands must prioritize the protection of existing users based on practical and technically sound principles of spectrum management.

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*Unlicensed White Space Devices*, Notice of Proposed Rulemaking and Order, 31 FCC Rcd 1657 (Feb. 26, 2016).

<sup>19</sup> IEEE Comments at 3-5.

<sup>20</sup> *Id.* at 3.

<sup>21</sup> *Id.* at 3-4.

Respectfully submitted,

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BROADCASTERS**

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A handwritten signature in black ink, appearing to read "Rick Kaplan", with a long horizontal line extending to the right from the end of the signature.

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Rick Kaplan  
Patrick McFadden

Bruce Franca  
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Robert Weller

November 15, 2017