

Donald W. Searles, Cal. Bar No. 135705
Email: searlesd@sec.gov
David J. Van Havermaat, Cal. Bar No. 175761
Email: vanhavermaatd@sec.gov
Sana Muttalib, Cal. Bar No. 267005
Email: muttalibs@sec.gov

Attorneys for Plaintiff
Securities and Exchange Commission
Michele Wein Layne, Regional Director
Alka N. Patel, Associate Regional Director
John W. Berry, Regional Trial Counsel
444 S. Flower Street, Suite 900
Los Angeles, California 90071
Telephone: (323) 965-3998
Facsimile: (213) 443-1904

UNITED STATES DISTRICT COURT
DISTRICT OF ARIZONA

SECURITIES AND EXCHANGE
COMMISSION,

Plaintiff,

vs.

Janus Spectrum LLC; David Alcorn; David
Alcorn Professional Corporation; Kent
Maerki; Dominion Private Client Group,
LLC; Janus Spectrum Group, LLC; Spectrum
Management, LLC; Spectrum 100, LLC;
Spectrum 100 Management, LLC; Prime
Spectrum, LLC; Prime Spectrum
Management, LLC; Daryl G. Bank; Premier
Spectrum Group, PMA; Bobby D. Jones;
Innovative Group, PMA; Premier Group,
PMA; Prosperity Group, PMA; Terry W.
Johnson; and Raymon G. Chadwick, Jr.,

Defendants.

Case No. 2:15-CV-00609-SMM

**DECLARATION OF COLEMAN BAZELON
IN SUPPORT OF PLAINTIFF SECURITIES
AND EXCHANGE COMMISSION'S
MOTION FOR SUMMARY JUDGMENT**

1 I, Coleman Bazelon, declare pursuant to 28 U.S.C. § 1746 as follows:

2 1. I have personal as well as expert knowledge of the matters set forth herein, and, if
3 called as a witness, I could and would competently testify under oath to the facts and opinions
4 stated herein.

5 2. I am a Principal in the Washington, D.C. office of The Brattle Group, Inc.
6 (“Brattle”). Brattle is an economic consulting firm providing expertise in a range of economic,
7 litigation, and regulatory matters. I lead the Telecommunications, Internet, Media, Entertainment
8 and Sports practice.

9 3. I have expertise in the areas of regulation and business strategies in the wireless,
10 wireline, and video industry sectors. Much of my practice involves valuation of complex
11 telecommunications assets. I have consulted and testified on behalf of clients in numerous
12 telecommunications, Internet and media matters, ranging from wireless license auctions,
13 spectrum management, and competition policy, to patent infringement and intellectual property
14 valuation, video programming and distribution valuation, and broadband deployment. I also
15 frequently advise regulatory and legislative bodies, including the U.S. Federal Communications
16 Commission (“FCC”) and the U.S. Congress.

17 4. Prior to joining Brattle, I served as a Vice President with Analysis Group, an
18 economic and strategy consulting firm. I have also served as a Principal Analyst in the
19 Microeconomic and Financial Studies Division of the Congressional Budget Office (“CBO”)
20 where I researched reforms of radio spectrum management, estimated the budgetary and private
21 sector impacts of spectrum-related legislative proposals, and advised on spectrum and other
22 auction design and privatization issues for all research at the CBO.

23 5. I received my Ph.D. and M.S. in Agricultural and Resource Economics from the
24 University of California at Berkeley. I also hold a Diploma in Economics from the London
25 School of Economics and Political Science and a B.A. from Wesleyan University. My curricula
26 vitae includes a complete list of my publications and prior testimony and is attached as Exhibit 1

1 to my declaration.

2 6. I have been retained by the SEC to provide an expert opinion in this action. The
3 Brattle Group is being compensated for my work on this matter at my customary rate of \$625 per
4 hour. That compensation is not in any way dependent on the opinions I express on the issues in
5 this case or the outcome of this matter. I am independent of the both the Plaintiff and the
6 Defendants in this matter. I have been assisted in my work on this case by my colleagues at The
7 Brattle Group, for whose work The Brattle Group is being paid its regular rates.

8 7. In reaching my opinions in this case, in addition to reviewing the SEC's First
9 Amended Complaint, I and my colleagues at the Brattle Group have also reviewed many of the
10 investigative and deposition transcripts in this case, and the exhibits used in those examinations.
11 A list of the documents I and my colleagues considered in forming the opinions expressed herein
12 is attached as Attachment B to my expert report.

13 **I. FCC SPECTRUM LICENSE BACKGROUND**

14 **A. Background on Spectrum and Wireless Communications**

15 1. Radio spectrum—or simply ‘spectrum’—is a subset of the electromagnetic
16 spectrum that, in addition to radio waves, also includes other phenomena such as visible light
17 and x-rays.¹ Spectrum is a finite and scarce natural resource. It is an essential input into any
18 number of wireless services, both commercial and governmental.

19 2. Most spectrum is allocated for exclusive use where typically only one user can
20 use the specified frequencies. The advantage of exclusive use of individual slices of spectrum is
21 that the user can communicate without interference from other users. Some spectrum is allocated
22 for shared use—such as the frequencies available for Wi-Fi—where any user can use the
23

24 ¹ Specific portions of the electromagnetic spectrum are defined by their frequency.
25 Frequency, in turn, refers to the number of times the peak of an electromagnetic wave passes a
26 fixed point in a second, which is called a Hertz (Hz). So the radio spectrum is the portion of the
electromagnetic spectrum whose frequency is between 3 kHz (3 thousand Hertz) and 300 GHz
(300 billion Hertz).

frequencies, but without any guarantees of interference-free communications. Users of exclusive-use spectrum gain access to the spectrum through a FCC-issued spectrum license.

3. Spectrum has no inherent or intrinsic value. Rather, the value of spectrum depends wholly on what it will be used for. While it is a scarce natural resource, some spectrum is more valuable than other spectrum, and not all spectrum is valuable. One reason for that may be restrictions on its use, which could be imposed by the FCC. Another reason could be the result of technical limitations and incompatibilities with certain commercial technologies.

4. Spectrum is defined along several dimensions: frequency location, geographic location, and bandwidth. Frequency location describes where on the map of radio spectrum a given band or license is situated. The radio spectrum is defined as electromagnetic spectrum from 3 kHz (3 thousand Hertz) to 300 GHz (300 billion Hertz).² Geographic location describes the geographic area or radius covered by a spectrum license. Spectrum bandwidth is measured as the distance on the frequency map covered by a given band or license. It is measured in kHz (or MHz or GHz) and describes the amount of spectrum covered by a given band or license. More bandwidth typically means more capacity. MHz-pop, often used as the unit measure of spectrum when comparing values of different bands of spectrum, is the number of people in the geographic area of a license times the number of MHz of spectrum covered by the license.

5. A spectrum license gives the right to transmit signals over a defined set of frequencies and geographic area. Spectrum licenses are issued by the FCC and include any limitations on use, such as power limits, geography, or other use limitations. The FCC manages and sets all rules for the non-federal use of radio spectrum. Similar functions are performed by the National Telecommunications and Information Administration in the Department of Commerce for federal uses of spectrum.

² U.S. Department of Commerce, National Telecommunications and Information Administration, "United States Frequency Allocations: The Radio Spectrum," October 2003, accessed May 11, 2016, <https://www.ntia.doc.gov/files/ntia/publications/2003-allochrt.pdf>.

1 **B. Understanding Spectrum Value**

2 6. As previously stated, spectrum has no inherent value; rather its value derives from
3 the value created by using it. Consequently, its economic value is derived from expected future
4 profits. Many things can influence the future profitability of any given spectrum. None of these
5 factors are decisive in and of themselves in creating value (although they can be in reducing
6 value) of a specific band of spectrum. The factors, taken on their own, include:

7 a. *Frequency Location.* The frequency of spectrum can influence its value. Lower
8 frequency spectrum works better for covering large areas, so when coverage is a factor, lower
9 frequency spectrum is more valuable.

10 b. *Bandwidth.* Beyond simply the greater quantity of spectrum, wider bandwidths
11 are more valuable than narrower bandwidths because they allow more efficient technologies to
12 be deployed. A more efficient technology means more capacity on a given band of spectrum.

13 c. *Geographic Location.* Spectrum licenses that cover larger, urban areas tend to be
14 more valuable than licenses that cover smaller, rural areas. Even after adjusting for population
15 and bandwidth, this value disparity persists.

16 d. *Use Restrictions.* Sometimes spectrum licenses have use restrictions. For
17 example, a license to broadcast television is restricted to that use and the licensee is not free to
18 cease broadcasting and put the spectrum to another use. Restricting how a license can be used
19 often reduces the value of that license.

20 **C. Opportunity Costs and Alternative Technologies**

21 7. A final consideration in spectrum value is the economic concept of opportunity
22 cost. Here the value of spectrum is limited by the cost of alternatives to using the spectrum. This
23 alternative or opportunity cost could be the cost of using an alternative band of spectrum or of
24 using a non-spectrum alternative. An example of a spectrum-based alternative would be that a
25 taxi company would never pay more for dispatch services than the alternative of using cell
26 phones for communicating with its fleet. An example of a non-spectrum alternative would be the

1 cost of fiber optic service limiting how much a satellite service could charge to transmit data
2 between two fixed points.

3 **D. History of FCC Licensing**

4 8. As noted above, the FCC issues licenses to use radio spectrum on specific
5 frequencies and in specified geographic locations. When issuing individual licenses, the FCC
6 assesses whether or not there is likely to be significant demand for the spectrum. When
7 applications for licenses are mutually exclusive (when there are applications for more spectrum
8 than is available) the FCC is required to issue the licenses through an auction.³

9 9. The FCC uses auctions because they are more efficient than the prior methods
10 used. Initially, the FCC decided among competing applications through comparative hearings,
11 also known as “beauty contests.” These were time consuming and subject to political influence.
12 Comparative hearings were replaced with lotteries, which is how the initial cellular licenses were
13 issued until 1994.⁴ Lotteries encouraged a lot of wasted effort and fraudulent activities and were
14 ultimately replaced with auctions.⁵ The FCC adopted regulations allowing for spectrum auctions
15 on March 8, 1994.⁶

16 10. When the FCC does not expect significant demand for a new set of licenses it
17 issues those licenses on a first-come, first-served basis. This is typically done through a
18 Frequency Coordinator, who is responsible for checking for conflicting applications and
19 resolving them in the pre-coordination stage before the application is filed at the FCC. The
20 Frequency Coordinator then passes the applications on to the FCC when the licensing window
21

22 ³ FCC, “About Auctions,” accessed May 12, 2016,
23 http://wireless.fcc.gov/auctions/default.htm?job=about_auctions&page=1.

24 ⁴ From 1981 to 1984, the FCC issued cellular licenses through competitive hearings. The
25 FCC adopted rules in 1984 and 1986 that provided for the remaining cellular licenses to be
26 issued by lotteries (FCC, “Cellular Service,” accessed May 12, 2015,
<https://www.fcc.gov/general/cellular-service>).

⁵ FCC Report to Congress on Spectrum Auctions (FCC 97-353), October 9, 1997, pp. 7-8.

⁶ FCC Report to Congress on Spectrum Auctions (FCC 97-353), October 9, 1997, p. 9.

1 opens. In other words, the FCC does not accept applications directly. The relevant dates are
2 specified in FCC Public Notices, which also specify the spectrum available and any special
3 considerations for that spectrum. The licenses at issue in this case were issued this way, and there
4 have been two such Public Notices. A Public Notice was issued on November 27, 2012, with a
5 pre-coordination date of December 11, 2012 and a licensing availability date of January 17,
6 2013.⁷ A second Public Notice was issued on December 30, 2014,⁸ and it specified two relevant
7 dates: pre-coordination on January 13, 2015 and licensing starting on February 10, 2015. During
8 the so-called pre-coordination phase, the Frequency Coordinator simply determines what
9 spectrum is available, but the application is not, in fact, submitted to the FCC until the license
10 availability date, which can be six to eight weeks after the Public Notice. In other words, as I
11 further explain below, there is no legitimate need to prepare applications, or to solicit payments
12 for such applications, before a Public Notice is issued.

13 **II. THE LICENSES AT ISSUE: 800 MHZ REBANDING**

14 **A. Rationale and the Creation of Expansion and Guard Bands**

15 11. The 800 MHz band was originally comprised of two segments—cellular
16 telephone and public safety. Cellular occupied 824 MHz to 849 MHz and 869 MHz to 894 MHz⁹
17 and Public Safety occupied two separate ranges: 854.75 – 861 MHz (interleaved with SMR,
18 Business, and Industrial Land Transportation channels) and 866 – 869 MHz (exclusively).

20 ⁷ FCC, “Public Notice: Public Safety and Homeland Security Bureau and Wireless
21 Telecommunications Bureau Announce the Completion of 800 MHz Band Reconfiguration in
22 Certain NPSPAC Regions,” WT Docket 02-55, DA 12-1838, November 27, 2012,
http://www.800ta.org/content/fccguidance/DA_12-1838_11.27.12.pdf.

23 ⁸ FCC, “Public Notice: Public Safety and Homeland Security Bureau and Wireless
24 Telecommunications Bureau Announce the Completion of 800 MHz Band Reconfiguration in
25 Certain NPSPAC Regions and the Availability of Additional Sprint Vacated Channels,” WT
26 Docket 02-55, DA 14-1904, December 30, 2014,
http://www.800ta.org/content/fccguidance/DA_14-1904_12.30.14.pdf.

⁹ FCC, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and
Order, and Order (FCC 04-168), p. 15, accessed May 12, 2016,
https://apps.fcc.gov/edocs_public/attachmatch/FCC-04-168A1.pdf.

1 Interleaved means that one sliver of spectrum (a channel) would be allocated to one type of user
2 (e.g., public safety), and an adjacent sliver of spectrum would be allocated to another type of user
3 (e.g., a SMR licensee). SMR is an abbreviation for Specialized Mobile Radio, which is simply a
4 two-way radio (walkie-talkie). At the time of rebanding, Nextel operated in the range of 851 –
5 866 MHz with spectrum that was allocated for SMR service. SMR did not allow for some of the
6 benefits of cellular architecture systems—multiple sites or frequency reuse. At the time, Nextel
7 was called Fleet Call, and it petitioned the FCC to be able to operate an enhanced SMR (ESMR)
8 system that would incorporate elements of cellular architecture: multiple sites and frequency
9 reuse. In 1991, the FCC granted the request.¹⁰ In contrast to most other blocks of spectrum, the
10 different uses in the public safety range were interleaved.

11 12. The interleaved nature of the Public Safety spectrum caused reliability issues for
12 critical communications. As the FCC explained, this interference caused “communication ‘dead
13 zones’” for public safety systems.¹¹ The reason for the interference was that ESMR mobile
14 devices are high power devices when compared to the Public Safety mobile radios.¹² The relative
15 high power of the ESMR devices caused public safety radios frequently to lose contact with their
16 base stations. The problem was not that both systems were operating simultaneously, but rather
17 that they did not have adequate separation between them—either along the electromagnetic
18 spectrum or geographically. It is possible for both systems to operate simultaneously, but only if
19

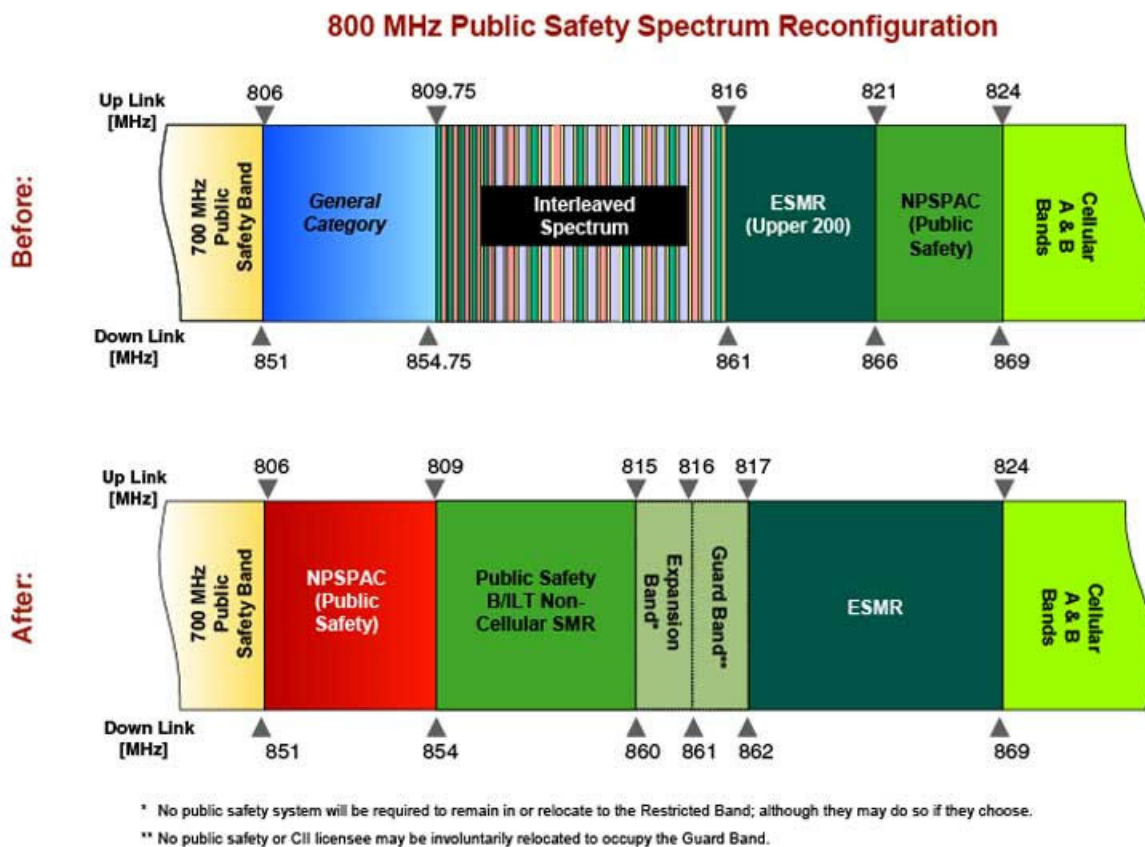
20 ¹⁰ *United States v. Motorola, Inc. and Nextel Communications, Inc.* Public Comments and
21 Response on Proposed Final Judgment, Federal Register Volume 60, April 17, 1995,
22 <https://www.gpo.gov/fdsys/pkg/FR-1995-04-17/html/95-8814.htm>, accessed April 20, 2016.

23 ¹¹ “800 MHz Band Reconfiguration Handbook” 800 MHz Transition Administrator, LLC,
24 p. 8, accessed April 20, 2016,
25 http://www.800ta.org/content/resources/Reconfiguration_Handbook.pdf.

26 ¹² Public safety systems are referred to as “high site” systems because the base stations are
usually located on tall buildings or hill tops. These systems have power output in the range of
100 to 200 watts and have a wide coverage area. In contrast, ESMR systems are “low-site”
systems, which mean that there are many base stations on either 30- to 50-foot poles or one- to
two-story buildings. ESMR systems transmit continuously at up to 1,000 watts.

they have adequate separation between them, either along the electromagnetic spectrum or geographically. Figure 1 illustrates the lack of spectral separation, and it also provides a clear visual representation of interleaved spectrum.

Figure 1: Before and After 800 MHz Rebanding¹³



13. The solution was to move public safety users to a continuous block of spectrum and private users to a separate continuous block of spectrum. The FCC wrote, “we are guided by the principle that we can minimize unacceptable interference in the 800 MHz band by placing similar system architectures in like spectrum and isolating dissimilar architectures from one another.”¹⁴ In addition to minimizing the number of borders between different users, continuous

¹³ “800 MHz Rebanding,” Concepts 2 Operations, accessed April 26, 2016, <http://concepts2ops.com/what-we-do/rebanding/>.

¹⁴ FCC 04-168, p. 15.

1 blocks of spectrum have the advantage of being able to use larger bandwidths (bigger highways)
2 and are more efficient for digital technologies. To be able to employ emerging digital
3 technologies, Nextel needed the increased bandwidth that would be possible with continuous
4 spectrum.

5 14. To achieve this, the FCC adopted a plan to reconfigure the 800 MHz band.¹⁵ The
6 overarching goal was to eliminate the interleaved spectrum (see Figure 2 for before and after
7 illustrations of the band) by separating different system architectures. As public safety, critical
8 infrastructure industries, and other non-cellular systems shared similar system architecture, they
9 were assigned to an 18 MHz band located at 806-815 MHz/851-860 MHz. A 14 MHz band
10 located at 817-824 MHz/862-869 MHz was designated for ESMR.

11 15. To further minimize any potential interference problems, the FCC created a Guard
12 Band and an Expansion Band. These bands create a buffer between the public safety licensees
13 and the ESMR portion of the band. In other words, these bands are creating a buffer zone
14 between two types of system architecture that have had interference problems in the past: cellular
15 architecture (ESMR) and non-cellular architecture (public safety systems, generally high-site
16 systems).¹⁶ The Expansion Band is located at 815-816 MHz/860-861 MHz¹⁷, and the Guard
17 Band is located at 816-817 MHz/861-862 MHz.¹⁸ Figure 2 illustrates the location (along the
18

19 ¹⁵ The plan is detailed in FCC 04-168 (WT Docket 02-55), which was adopted on July 8,
20 2004 and released on August 6, 2004. Note that, in addition to spectrum reconfiguration, this
21 plan detailed additional technical controls that would be implemented to address interference.

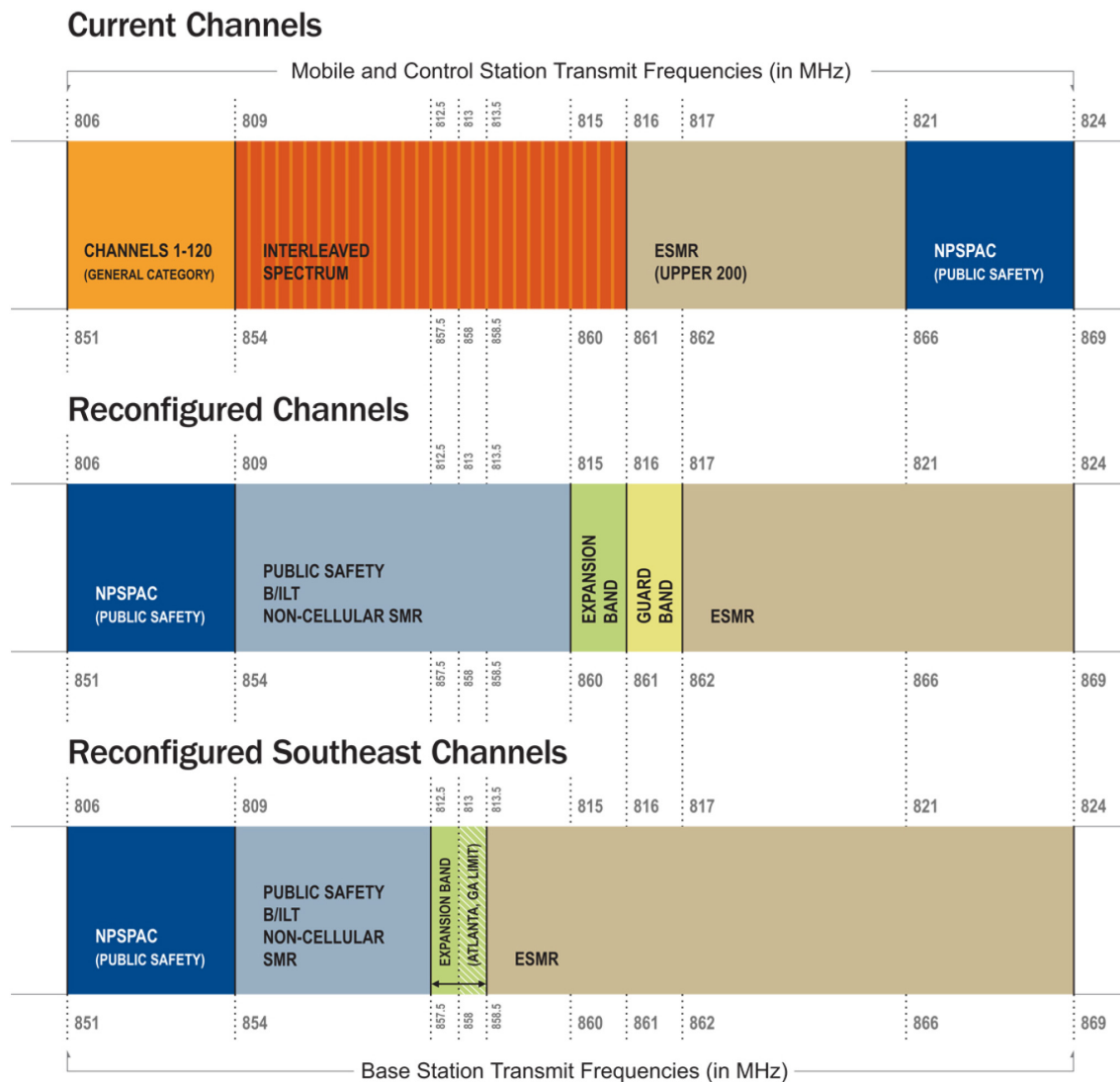
22 ¹⁶ “800 MHz Band Reconfiguration Handbook,” 800 MHz Transition Administrator, LLC,
23 p. 22, accessed May 12, 2016,
24 http://www.800ta.org/content/resources/Reconfiguration_Handbook.pdf.

25 ¹⁷ The Expansion Band is located at 812.5-813.5MHz/857.5-858.5 MHz in the Southeastern
26 U.S. and at 813-813.5 MHz/858-858.5 MHz within a 70-mile radius of Atlanta. “800 MHz Band
Reconfiguration Handbook,” 800 MHz Transition Administrator, LLC, p. 22, accessed
May 12, 2016, http://www.800ta.org/content/resources/Reconfiguration_Handbook.pdf.

¹⁸ There is no Guard Band in the Southeastern U.S. “800 MHz Band Reconfiguration
Handbook,” 800 MHz Transition Administrator, LLC, p. 23, accessed May 12, 2016,
http://www.800ta.org/content/resources/Reconfiguration_Handbook.pdf.

electromagnetic spectrum) of the Expansion and Guard bands. The licenses at issue in this case are in either the Expansion or Guard Band.¹⁹

Figure 2: Location of the Expansion and Guard Bands²⁰



16. The FCC put several restrictions on these bands. It notes that “800 MHz cellular systems – as defined in Section 90.7 – are prohibited from operating on channels 1-550 in non-

¹⁹ Exhibit 2 specifies for each of the licenses at issue whether it is in the Guard or Expansion Bands.

²⁰ The top graphic shows the then-current channels prior to rebanding. 800 MHz Transition Administrator, “800 MHz Band Reconfiguration Program.” accessed April 15, 2016, http://www.800ta.org/_img/figures/img_channel_lrg.gif.

border areas.”²¹ All of the licenses at issue in this case are for channels ranging from 472 to 549 and are in non-border areas.²² Section 90.7 defines high-density cellular system in the 800 MHz ranges, and any major wireless carrier like Sprint would be classified as a high-density cellular system.²³ A non-high-density cellular system—that is one limited to six or fewer towers—would not be useful to a large wireless company. Accordingly, Sprint and other major wireless carriers would be prohibited from operating their cellular systems in the Guard Band or Expansion Band.

B. Financing the Rebanding and Valuing the Associated Spectrum

17. Changing frequencies is non-trivial, and in most cases requires new equipment and the associated engineering and testing costs. To achieve this, the FCC plan for the 800 MHz band required Nextel “to relinquish all of its 800 MHz band spectrum holdings below 817 MHz/862 MHz.”²⁴ In exchange, Nextel was granted the spectrum rights for ten megahertz of spectrum located at 1910-1915 MHz/1990-1995 MHz. This large block of contiguous spectrum was worth more than the interleaved spectrum that Nextel relinquished. To prevent Nextel from receiving a windfall from the reconfiguration, Nextel was required to pay for all of the costs associated with shifting the public safety systems and any other 800 MHz band incumbents to a new location in the 800 MHz band.²⁵ However, the costs were unknown and could have been significant. Nextel gained spectrum rights in the 1900 MHz band (a gain), relinquished rights in the 800 MHz band (a loss), and had to pay all associated reconfiguration costs (a loss). If the net

²¹ FCC 04-168, p. 210.

²² See Exhibit 2. Border areas are defined as areas within 140 km from the border of Canada and 110 km from the border of Mexico (FCC 04-168, p. 95).

²³ Specifically, Section 90.7 of FCC 04-168 defines an 800 MHz cellular system as a high-density system if it has six or more overlapping interactive sites with hand-off capability and is a site with an antenna height of less than 30.4 meters above ground level with an antenna height above average terrain of less than 152.4 meters and twenty or more paired frequencies (p. 189).

²⁴ FCC 04-168, p. 9. Nextel gave up approximately 10.5 MHz in the 800 MHz spectrum.

²⁵ FCC 04-168, p. 9.

1 value of these three items was positive, Nextel would be required to pay that amount to the U.S.
2 Treasury.²⁶

3 18. The FCC estimated the value of the 1900 MHz spectrum that was granted to
4 Nextel by analyzing sales of comparable spectrum.²⁷ The FCC selected two recent transactions
5 as benchmarks. The transactions were both arms-length transactions and involved only spectrum,
6 as opposed to a bundle of spectrum and other assets. Further, the transactions were for relatively
7 large numbers of licenses spanning a diverse geographic mix of large and small markets, which
8 would make the transactions reasonable proxies for a nationwide license. The FCC took the
9 average value of \$1.62 per MHz-pop and scaled it up by five percent to account for the fact that
10 it is a nationwide license, arriving at a final value of \$1.70 per MHz-pop. Based on the U.S.
11 population in 2000 of 285.62 million, the FCC estimated the value of the 1900 MHz spectrum to
12 be \$4.86 billion.²⁸

13 19. The FCC similarly valued the 800 MHz spectrum given up by Nextel. For the
14 contiguous bands it adopted the \$1.70/MHz-pop estimate it used for the 1900 MHz spectrum.
15 This estimate recognized that when compared to the 1900 MHz band, the smaller bandwidth and
16 different technologies offset any increase in value from the propagation benefits of lower
17 frequencies.²⁹ For the interleaved bands, the FCC reduced this amount by 12.5% to \$1.49/MHz-
18 pop for various inefficiencies created by the interleaved nature of the channels.³⁰ Crucially,
19 however, this estimate is for an estimated total of 3.76 MHz of spectrum that is used in an
20 integrated, nationwide mobile phone network.³¹ It was not for individual channels or spectrum
21

22 ²⁶ Nextel also relinquished all of its 700 MHz Guard Band spectrum. The FCC concluded it
23 to have a *de minimis* value. (FCC 04-168, p. 153)

24 ²⁷ FCC 04-168, pp. 142 - 143.

25 ²⁸ \$4.86 billion is equal to the product of 10 MHz of spectrum, the value of \$1.70 per MHz-
26 pop, and the population of 285.62 million.

²⁹ FCC 04-168 ¶ 315.

³⁰ FCC 04-168 ¶ 318-320.

³¹ FCC 04-168 ¶ 319.

1 that could not be integrated into a national commercial wireless network. In other words, the
2 FCC's value for this spectrum was based on how it had been used by Nextel prior to rebanding,
3 *i.e.*, as part of a nationwide cellular network. Because of the severe limitations placed on the 800
4 MHz Guard Band and Expansion Band as part of the rebanding process, this prior valuation is
5 meaningless when analyzing the post-rebanding value of the restricted Guard and Expansion
6 Band frequencies.

7 20. As per a 2004 FCC order, the FCC said Nextel would pay the total costs of
8 rebanding or \$2.8 billion, whichever was higher.³² However, rebanding has taken longer and
9 been more costly than expected. Rebanding is still not complete,³³ and Sprint has spent
10 approximately \$3.4 billion from the inception of the program to March 31, 2015.³⁴

11 **III. DEFENDANTS MISREPRESENTED MANY ASPECTS OF THEIR OFFERING**

12 **A. Potential Uses of the Rebanded Licenses**

13 21. Defendants represented that the spectrum was valuable because there would be
14 demand from Sprint or the other major wireless carriers. However, there were regulatory and
15 technical reasons why this would not be possible. All of these reasons were spelled out in
16 publicly available documents.

17 22. The licensed spectrum for which the Defendants were selling license services
18 were very different from the major cell phone companies' licensed spectrum. The Defendants
19

20 ³² "Sprint: rebanding will cost billions more in years ahead," accessed April 20, 2016,
21 <http://www.fiercewireless.com/story/sprint-rebanding-will-cost-billions-more-years-ahead/2009-03-03>.

22 ³³ The 800 MHz Transition Administrator posts quarterly progress reports online
23 (<http://www.800ta.org/content/reporting/>). As of April 20, 2016, the most recent report available
24 is Q3 2015 (published on December 31, 2015), and the closing of 800 MHz rebanding is only
78.1% complete.

25 ³⁴ Sprint, Annual Report for the year ended March 31, 2015, p. 7, accessed April 25, 2016,
26 <http://d1lge852tjjqow.cloudfront.net/CIK-0000101830/ecf915d0-a482-40c0-ad16-0cf0961de878.pdf?noexit=true>. The report notes that all of the costs accounting for \$3.4
billion have been deemed eligible costs by the transition administrator.

1 were selling licenses to 800 MHz Expansion band and Guard band, which are the left over
2 slivers of the spectrum that had made the cell phone company's licenses useful. The purpose of
3 the 800 MHz reconfiguration was to eliminate interference between these bands, which was done
4 by separating them and creating buffer space between them. For the buffer to remain effective, it
5 had to have restrictions on its use, one of which is that it cannot use high-density cellular
6 architecture because the cellular transmissions interfere with the high-site transmissions.

7 23. Defendants misrepresented to investors the purpose of Expansion and Guard
8 Bands. They wrote, "Guard bands were necessary in the old analog system to create a guard or
9 barrier from one frequency to another. The expansion bands were created to have additional
10 bands of spectrum available if needed to expand. Neither are needed in the digital world."³⁵ This
11 is not true. The FCC approved the rebanding plan after digital technology had already been
12 operating in the 800 MHz band (ESMR is digital), and the FCC required that guard bands be put
13 in place to separate different system architectures.

14 24. In the 800 MHz Guard and Expansion Bands, a channel license authorizes the use
15 of a maximum bandwidth of 20 kHz (20,000 Hz) in these bands. The cellular voice and data
16 technology used by major wireless providers requires a minimum bandwidth of 1.25 to 1.4 MHz
17 (1,250,000 to 1,400,000 Hz). Anything less than this minimum is incompatible with the systems
18 used by the major wireless providers. As the channels at issue are 20,000 Hz, they are orders of
19 magnitude smaller than the absolute minimum needed to be useful to the major wireless
20 carriers—1.25 million Hz.

21 25. In some bands, the FCC allows a licensee to combine adjacent spectrum to make
22 contiguous spectrum and in turn increase the bandwidth (more lanes on the highway). Even if it
23 were possible to accumulate multiple channels in the Guard and/or Expansion Bands, this
24

25 ³⁵ Declaration of Sana Muttalib in Support of SECs' Motion for Summary Judgment
26 ("Muttalib Decl."), Ex. 71, pp. 3-4 (Letter to Expectrum Partners from Terry Johnson and Ray
Chadwick).

1 spectrum would still be incompatible with the systems of any of the major wireless carriers. As
2 the channels are each only 20 kHz, the minimum compatible bandwidth would require 63
3 adjacent channels, all with waivers, either of which is highly unlikely. If granted, a waiver
4 would allow license holders to use the spectrum for a use other than is permitted under the
5 regulatory regime. The FCC explains that it would be very hard to get a waiver to operate a high-
6 density cellular system in the Guard or Expansion bands: “Most importantly, were we to decide,
7 here, to allow unrestricted, high density cellular operation in the non-cellular portion of the band,
8 we would undo four years of intensive study and terminate this proceeding by virtually issuing
9 an invitation for a high-density, multi-cell operator to construct interference-generating systems
10 in incompatible spectrum and potentially put our first responders at risk and threaten their ability
11 to adequately address Homeland Security threats.”³⁶

12 26. Beyond those reasons why the Guard and Expansion Band spectrum is not
13 valuable to major wireless carriers, Sprint publicly stated that they were not able to buy spectrum
14 in those bands. In an article in an industry publication, Bill Jenkins, Sprint’s vice president of
15 spectrum management said, “Sprint is forbidden from holding channels between 851 MHz and
16 862 MHz.”³⁷ The same article noted that, while it may seem that the Guard and Expansion bands
17 would be appealing to Sprint, who has 14 MHz of continuous spectrum next to the Guard Band,
18 many of the licenses being offered are “site-specific licenses for just one or two channels.”
19 Recall that a channel has a 20 kHz bandwidth, which as explained previously, is too small to be
20 useful to a major wireless carrier. Moreover, the FCC does not allow the sale of one of these
21 licenses until it has an operating system.³⁸

23 ³⁶ FCC 04-168, p. 93.

24 ³⁷ Muttalib Decl., Ex. 316 (“Fair warning from Sprint: We can’t buy 800 MHz spectrum we
25 just returned to the FCC”) (October 21, 2014).

26 ³⁸ The FCC regulations state, “A license to operate a conventional or trunked radio system
may not be assigned or transferred prior to the completion of construction of the facility.” (47
CFR 90.609).

1 27. Consistent with Sprint’s warning, Michael Wilhelm, the Deputy Chief of the
2 Policy and Licensing Division of the Public Safety and Homeland Security Bureau of the FCC,
3 has declared that “neither Sprint nor any other cellular carrier would currently be allowed by the
4 FCC to operate a CDMA (or LTE) system on an Expansion Band or Guard Band channel, by
5 way of a lease from the licensee thereof, or otherwise.”³⁹

6 28. Defendants represented that they planned to sell or lease the channel back to
7 Sprint because they assumed that Sprint still had the towers set up to broadcast on those
8 channels. While it may have been the same channel, there were new restrictions on its use.
9 Moreover, Sprint had changed the technology of its system, and it would have been nontrivial to
10 reconfigure the towers to broadcast at the old spectrum.⁴⁰ Even if the FCC were to have allowed
11 Sprint to use that old spectrum (and there is no indication it would have), it certainly would not
12 have been as easy as simply flipping a switch.

13 29. In order for Sprint or wireless carriers to operate their cellular systems in the
14 Guard Band or Expansion Band, they would have required a waiver from the FCC to do so,
15 which the FCC was highly unlikely to grant. But even with a waiver, by 2014, the systems Sprint
16 was using were completely different and incompatible with the narrow spectrum bandwidths
17 associated with the Guard Band and Expansion Band. Furthermore, the systems Sprint was using
18 in 2004, when the reconfiguration started, were far different than what it was using in 2014. So,
19

20 ³⁹ Muttatabib Decl., Ex. 318 (Michael Wilhelm declaration, p. 2, July 17, 2014).

21 ⁴⁰ Sprint Nextel publicly made comments that, as part of their “Network Vision Initiative”
22 they were moving all of their systems away from iDEN (an ESMR system) to CDMA and LTE.
23 In the Matter of Improving Spectrum Efficiency Through Flexible Channel Spacing and
24 Bandwidth Utilization for Economic Area-based 800 MHz Specialized Mobile Radio Licenses,
25 Comments of Sprint Nextel Corporation, WT Docket No. 12-64, April 13, 2012, pp. 3-4. Note
26 that Sprint Nextel had been making comments about their transition to CDMA and LTE since
2011: “Sprint announced in late 2011 that [it] would decommission its Nextel iDEN service on
its 800 MHz spectrum beginning in 2013.” (“Sprint details plans to shut down iDEN cell sites,”
Fierce Wireless, February 7, 2012, accessed April 7, 2016,
<http://www.fiercewireless.com/story/sprint-details-plans-shut-down-iden-cell-sites/2012-02-07>).

1 even with a waiver, Sprint could not simply go back and turn on their old tower again, even if the
2 appropriate bandwidth were available. The equipment is gone—they would have sold or
3 reconfigured that equipment when they relinquished those channels.

4 30. Furthermore, even assuming that a waiver had been granted and that it would
5 have been possible to use the licenses for cellular services, the major wireless carriers are now
6 using LTE technology, which, as stated earlier, requires a minimum channel width of 1.2 MHz.
7 It would take 60 contiguous channels in the 800 MHz Expansion and Guard Bands to achieve a
8 bandwidth of 1.2 MHz. Defendants had at most a few channels in any license area. Furthermore,
9 those channels typically were in the middle of the Guard and Expansion Bands, making them
10 non-contiguous with frequencies outside of those bands.

11 31. Defendants told potential investors, “The FCC does not allow any entity or
12 individual to own more than one guard band and one expansion band in each EA (economic
13 area).”⁴¹ Other offering documents stated that Defendants were planning to apply for five
14 channels.⁴² Even if they were applying for five channels, they would have only had 8.3% of the
15 bandwidth needed to use LTE. Defendants also told investors, “We are only applying for one
16 guard band in each EA. Janus was assured by the coordinator himself that they would get each of
17 the licenses they apply for.”⁴³

18 **B. Returns and Spectrum Value**

19 32. All of the high returns that were represented to investors were based on leasing to
20 major wireless carriers. Not being able to lease to major wireless carriers and instead only having
21 the option to lease to a small business, or being required to create a new business from the
22 ground up, greatly diminishes the represented value of the licenses.

24 ⁴¹ Muttalib Decl., Ex. 71, p. 5 (Letter to Expectrum partners from Terry Johnson and Ray
Chadwick).

25 ⁴² Muttalib Decl., Ex. 89, p. 4 (Janus Spectrum Group Investment Offering).

26 ⁴³ Muttalib Decl., Ex. 71, p. 5 (Letter to Expectrum partners from Terry Johnson and Ray
Chadwick).

1 **C. Application Urgency**

2 33. Janus took investor's money – the full \$40,000 per application – before Public
3 Notices were even filed. The public notices provided for a period of coordination before the
4 filing window opened. There was no advantage to doing any of the application paper work prior
5 to this time because it did not create any priority in getting a license. Furthermore, the
6 coordination work required to prepare an application (to make sure the applied for license did not
7 interfere with other licenses) does not take weeks or months—it could not have, given that some
8 frequency coordinators charge only a few hundred dollars for the service. Consequently, Janus
9 did not need to take any investor money before the Public Notice was issued.

10 **D. Build-Out Requirements**

11 34. While the Defendants understood that the FCC required an operating tower to be
12 functioning within one year of being awarded the contract, they misled investors with overly
13 optimistic statements about the need to build towers or acquire equipment. They withheld a
14 critical piece of information from their investors: the FCC does not allow the sale of certain
15 license types unless the licensee had built and operated a transmission system.⁴⁴ This is the case
16 with the licenses at issue in this case.⁴⁵ The FCC established buildout requirements to ensure that
17 spectrum is used efficiently.⁴⁶ If the licensee does not build a system within one year the FCC
18
19

20 ⁴⁴ Daniel R. Goodman, Solely in his Capacity as Receiver, *Chadmoore Wireless Group,*
21 *Inc., and SMR Services, Inc., et al., v. Federal Communications Commission and United States*
22 *of America*, Court of Appeals No. 95-1585, July 16, 1999.

23 ⁴⁵ The licenses at issue are of four different service classes, GM, GB, YB, and YX. They all
24 require construction and operation of a system to occur within one year of the license grant.
25 Though it is possible to apply for extended implementation that allows construction for up to five
26 years, this is reserved for very large or very complex systems. FCC, "Construction/Coverage
Requirements," accessed on May 12, 2016,
http://wireless.fcc.gov/licensing/index.htm?job=const_req_by_service.

⁴⁶ Government Accountability Office, Report to Congressional Requesters, "Spectrum
Management: FCC's Use and Enforcement of Buildout Requirements," February 2014, 8.

1 cancels the license.⁴⁷ It was not sufficient to simply put a repeater (a radio device that takes an
2 existing signal and rebroadcasts it) on a pole for the FCC build-out requirements to be satisfied.
3 The FCC explains, “a base station is not considered to be placed in operation unless at least one
4 associated mobile station is also placed in operation.”⁴⁸

5 35. Mr. Maerki misled investors when he said, “High demand spectrum that’s already
6 in use with current income streams.”⁴⁹ No channel that was available in the Guard or Expansion
7 Bands that Defendants were offering had any existing income stream. Any channels that were
8 being used would have been moved as part of the rebanding. Mr. Maerki withheld from investors
9 that the licenses they would receive would not have any income streams, and that investors
10 would be on the hook for building out the channel within a year, a costly proposition.

11 **IV. LICENSE VALUES WERE OVERSTATED**

12 **A. Janus’s Claims of Value**

13 36. When discussing the value of the available spectrum, Maerki cites spectrum
14 valuations from the FCC. “What is this worth? When the FCC did the swap with Sprint and
15 Nextel, they said the Swiss cheese was worth \$1.49, and the clean and contiguous was worth
16 \$1.70. What that means, from a valuation standpoint, is if you have an area – and I’m going to
17 discuss this area – of about 600,000 people, when the FCC hands you their grant, according to
18
19
20

21 ⁴⁷ Daniel R. Goodman, Solely in his Capacity as Receiver, Chadmoore Wireless Group,
22 Inc., and SMR Services, Inc., et al., v. Federal Communications Commission and United States
23 of America, No. 95-1585 (United States Court of Appeals July 16, 1999). See also, James
24 Murray, WIRELESS NATION: THE FRENZIED LAUNCH OF THE CELLULAR REVOLUTION IN AMERICA
(2002).

25 ⁴⁸ 47 CFR 90.155(c). The FCC’s Rules and Regulations are located in Title 47 of the Code
26 of Federal Regulations (CFR). 47 CFR part 90, subpart G explains that services under subpart S
must abide by the subpart G rules. The Guard and Expansion Band frequencies are covered by
subpart S (47 CFR 90.601).

⁴⁹ Muttalib Decl., Ex. 21, p. 20 (Audio transcription of presentations by Kent Maerki).

1 their valuation, it's worth \$180,000. That's just an appraisal, no better than your home appraisal
2 by your county assessor.”⁵⁰

3 37. This comparison is incredibly misleading. The spectrum being valued at
4 \$1.70/MHz-pop was the (5 MHz + 5 MHz) PCS G Block that Nextel was being given to offset
5 the costs of the rebanding of the 800 MHz spectrum at issue here. The PCS G Block (in the
6 1,900 MHz or 1.9 GHz range) was an extension of the PCS spectrum sold at auction in the mid-
7 1990s. This is well established, broadband spectrum with a mature ecosystem and tens or
8 hundreds of millions of customers. It is completely unlike the spectrum at issue in this case. As
9 noted above, even the \$1.49 figure was a valuation in the context of reorganization of the band
10 for spectrum that was already being used in an integrated national commercial network. Further,
11 the spectrum valued had significantly less restrictive rules of use than the Expansion and Guard
12 Band licenses at issue here. Hence, Maerki's statements regarding the value of the spectrum is
13 something like noting what the Empire State building was valued at when discussing swampland
14 in Florida.

15 38. Mr. Maerki further claimed in his “Money From Thin Air” presentation, “Auction
16 of 2008, winning bidders paid an average of \$3.65 a pop in markets of a half-a-million or more.
17 Not \$1.49 or \$1.70. We've never seen anything this low again.”⁵¹ The claim of “\$3.65 a pop in
18 markets of a half-a-million or more” is very misleading as a measure of value for Guard and
19 Expansion Band spectrum. The reference is to the 700 MHz auction in 2008.⁵² As an initial
20 matter, that auction sold licenses of wide bandwidths, ranging from 6 MHz to 22 MHz—not 20
21 kHz narrowband licenses available in the Guard and Expansion Bands. In that auction the
22 average price of all spectrum licenses sold was \$1.28/MHz-pop.⁵³ The price of individual bands
23

24 ⁵⁰ Muttalib Decl., Ex. 21, pp. 32-33 (Audio transcription of presentations by Kent Maerki).

25 ⁵¹ Muttalib Decl., Ex. 21, p. 32 (Audio transcription of presentations by Kent Maerki).

26 ⁵² I was a bidder for Cox Communications in that auction.

⁵³ The auction raised \$19 billion in net bids, selling 52 MHz of spectrum, covering 285 million people (based on 2000 census numbers). See FCC, “Auction 73, 700 MHz Band,”

1 ranged from \$0.65/MHz-pop to \$2.70/MHz-pop.⁵⁴ To claim “\$3.65 a pop” Mr. Maerki cherry
2 picked the auction results, used the highest priced band, and then restricted it to the larger
3 markets that sell for above average prices.

4 39. Further, marketing materials from Premier Spectrum Group mischaracterized the
5 spectrum at issue: “This spectrum is in close proximity to spectrum for which AT&T and
6 Verizon paid nearly \$17 billion in 2008; it is these channels on which both carriers are building
7 out their modern LTE networks.”⁵⁵ This is another reference to the 700 MHz auction in 2008. As
8 noted above, although the spectrum in the Guard Bands is near the 700 MHz band, it is not
9 similar in how it is configured (narrow versus wide bandwidths) and has severe restrictions on
10 how it can be used (restrictions on cellular architecture).

11 40. In the “Money From Thin Air” presentation, Mr. Maerki stated, “Again, AT&T
12 paid in the same year \$16.10 a pop, not \$1.49, not \$1.70, not \$3.65; \$16.10. And then Verizon
13 paid \$22.72 for rural cellular, and Paul Allen of Microsoft some stuff for \$40 a megahertz
14 pop.”⁵⁶ Again, this representation as an indicator of spectrum value is very misleading. He is
15 comparing a per-pop number—the value per person covered—to a per pop per MHz number—
16 the value of the per pop number divided by the number of MHz in the transaction. It is also
17 unclear if the transaction was for just spectrum, or for a developed cellular business complete
18 with customers and infrastructure.

19
20
21 accessed May 13, 2016,

22 http://wireless.fcc.gov/auctions/default.htm?job=auction_summary&id=73 and United States
23 Census, “Resident Population of the 50 States, the District of Columbia, and Puerto Rico: Census
2000,” accessed May 13, 2016,

24 <https://www.census.gov/population/www/cen2000/maps/files/tab02.pdf>.

25 ⁵⁴ Coleman Bazelon, “Too Many Goals: Problems with the 700 MHz Auction,” Information
Economics and Policy 21 (2009), pp. 115–127, figure 3.

26 ⁵⁵ Muttalib Decl., Ex. 19, p. 7 (Premier Spectrum Group Membership Fee Offering 2013).

⁵⁶ Muttalib Decl., Ex. 21, p. 33 (Audio transcription of presentations by Kent Maerki)
Exhibit 21, p. 33; Ex. ____ David Alcorn TR p. 82; Ex. Daryl Bank INV TR p. 142.

41. Overall, the use of the value of so-called comparable spectrum was very misleading because the spectrum assets underlying the valuations cited were not comparable to the licenses available in the Expansion and Guard Bands.

1. Valuation Based on Leasing Spectrum to a Major Wireless Carrier

42. Defendants also presented pro forma valuations based on leasing the spectrum to major wireless carriers. In an email to Mr. Bank, Mr. Alcorn noted that an estimated value of 5 channels in the top 25 Economic Areas would be “approximately \$61.1 million.”⁵⁷ He calculated this by multiplying a population of 164,780,747 by a spectrum value of \$1.49/MHz-pop by .25 MHz of spectrum. It is not clear where Mr. Alcorn is getting .25 MHz, as each channel in the Guard and Expansion Band is 20 kHz (0.02 MHz). They would need 12.5 channels to get 0.25 MHz ($12.5 * 0.02 \text{ MHz} = 0.25 \text{ MHz}$). If Mr. Alcorn is intending to value five 0.02 MHz channels in the top 25 EAs with an assumed value of \$1.49, the correct calculation would be $164,780,747 \text{ pop} * \$1.49/\text{MHz-pop} * 0.1 \text{ MHz of spectrum}$ for a total of \$24.6 million. Without even challenging the \$1.49/MHz-pop (which is far too high, as I discuss below), simply correcting Mr. Alcorn’s math mistake reduces the estimate by \$36.8 million.

43. The apparent goal of Mr. Alcorn’s calculation was to value five channels (each with a bandwidth of 0.02 MHz, for a total of 0.1 MHz) in the top 25 Economic Areas.

44. These rates of returns were built on a series of assumptions that included assuming the licenses covered Economic Areas (large metropolitan areas that span millions of people and many miles) when the majority of licenses at issue covered small metropolitan areas and covered radii of less than 13 miles.

45. Even if the channels were contiguous (which would be highly unlikely, as defendants only have two contiguous channels in two locations), and if they obtained a waiver to use high-density cellular (highly unlikely given the purpose of establishing the Guard and

⁵⁷ Muttalib Decl., Ex. Ex. 235 (Email from David Alcorn to Daryl Bank).

1 Expansion Bands), it would be of no value to a major wireless carriers because the technology
2 they use requires a minimum of 1.25 MHz. To get to that bandwidth, they would need 62.5
3 contiguous Guard Band or Expansion Band channels, not 5.

4 46. In his “Money from Thin Air” presentation, Mr. Maerki gives a specific example
5 of potential revenue from leasing wireless spectrum in Economic Area 27 (Aiken and Augusta,
6 Georgia). He explained that, according to the 2000 U.S. Census, that area had a population of
7 605,000. “Spread out about 7.5% of the marketplace, or 45,000 customers, in Aiken/Augusta
8 area, spending about 60 bucks a month for a total income – here we go, money from thin air –
9 2,700,000.” He then assumes operating margins of 40% and concludes the profit is at least one
10 million dollars per month.⁵⁸ “They have 360 channels in that area. Divide that into the millions,
11 they are talking about \$3,000 a channel. Your license in that area, should you select to be in that
12 area, would be for four channels, times 3000 or \$12,000 a month. Wow.”⁵⁹ ... “[Sprint or
13 somebody like them] will probably lease it back to you and pay you 4,800 a month.”⁶⁰

14 47. In one of Janus Spectrum’s pro formas, they estimate an average annual return of
15 862% for five channel licenses in the top 25 EAs.⁶¹ The net annual spectrum lease payment
16 associated with these licenses is \$16,155,386.

17 48. These estimates are based on a relatively simple calculation. They start with the
18 population of the Economic Area from the 2000 Census, and they project that a given major
19 wireless carrier will have a 7.5% market penetration. 7.5% of the EA population gives the
20 number of subscribers, and they assume that each subscriber pays \$60 per month. Monthly
21 operating revenue for the carrier is then calculated as 7.5% of the EA population multiplied by
22

23 ⁵⁸ Muttalib Decl., Ex. 21, p. 34 (Audio transcription of presentations by Kent Maerki)
24 Exhibit 21, p. 34.

25 ⁵⁹ Muttalib Decl., Ex. 23, p. 32 (Audio transcription of WPSL Radio Show).

26 ⁶⁰ Muttalib Decl., Ex. 23, p. 33 (Audio transcription of WPSL Radio Show); Ex. 21 (audio
transcription of presentations by Kent Maerki).

⁶¹ Muttalib Decl., Ex. 113 (Janus Spectrum Proforma).

1 \$60. Janus Spectrum assumes an operating margin of 40% of the operating revenue, giving them
2 a value for monthly cash flow.

3 49. From there, they assume that there were 360 paired channels that were used by
4 the carrier to generate this revenue. According to their draft Pro Forma in Exhibit 331, 360
5 “represents the number of channels assumed to be within each economic area once all licenses
6 have been granted.”⁶² Next, they calculated the monthly cash flow per channel by dividing the
7 cash flow by the number of channels (360). They then assume that there are five channels that
8 could be leased to the carrier and that each one of these earns the same monthly cash flow as
9 each of the 360 channels for that EA. They calculate a monthly cash flow for all acquired
10 channels by multiplying the monthly cash flow per channel by the number of acquired channels
11 (five) and then assume that the lease payment would be 40% of the cash flow for the acquired
12 channels. The pro forma assumes that Janus would collect 18% of this net monthly spectrum
13 lease payment as commission, and the remaining 82% would go to investors. The annual return
14 is calculated by dividing the net annual spectrum lease payment (the monthly net spectrum lease
15 payment multiplied by 12) by an acquisition cost of \$75,000.

16 50. There are several fatal flaws with this analysis. Aside from the fact that the
17 licenses at issue are virtually worthless to a major wireless carrier, they are using Economic
18 Areas (EAs), which are very large metropolitan areas that may even span several states. For
19 example, the top EA is listed as “NYC-Long Is. NY-NJ-CT-PA-MA-VT” with a population of
20 more than 25 million.⁶³ Clearly, this is a very large area—much larger than the licenses at issue
21 in this case. The licenses at issue in this case do not cover the entire EAs, but rather cover much
22 smaller ranges, all measured as a distance from a fixed point. The majority of licenses in this
23 case have a radius of 20 kilometers (12.4 miles), which would cover only a small fraction of the
24

25 ⁶² Muttalib Decl., Ex. 331, p. 5 (“Pro Forma Assumptions and Explanations”).

26 ⁶³ Muttalib Decl., Ex. 113, p. 1 (Janus Spectrum Proforma).

1 population the EAs cover. This would decrease any lease payment significantly. Furthermore,
2 their calculation does not account for the fact that if there were more channels available, there
3 would be fewer subscribers per channel.

4 **B. A True Estimate of Value**

5 51. An important limiting factor to the value attributable to a given license from a
6 given deployment is the opportunity cost of achieving the same business objectives with an
7 alternative spectrum license or a non-spectrum alternative. This principle applies more broadly in
8 spectrum and economics generally. You would not pay \$4.00 per gallon for gasoline if a station
9 across the street was selling the same grade of gasoline for \$3.50 per gallon. Similarly, you
10 would not pay more for a spectrum license than it would cost to gain access to an equivalent
11 spectrum license. In the language of economics, you would not value access to spectrum from
12 one license more than the opportunity cost of gaining access to equivalent spectrum through
13 another license. The implication of this for the current case is that no opportunity to monetize the
14 spectrum licenses at issue in this case would ever return more than the cost of acquiring
15 alternative, but similar, licenses.

16 52. Moreover, a fundamental rule of any economic valuation analysis involves
17 consideration of the supply of and demand for the input. Where there is abundant supply, or
18 minimal demand, for the input, it is not likely to have a high monetary value. Such is the case
19 with the spectrum at issue in this case, as there is abundant supply of available or free licenses
20 from the FCC. The FCC Universal Licensing System (ULS) is a publicly accessible tool that
21 allows the public to search for and download information related to licenses the FCC has
22 granted. Frequency coordinators use the information in the ULS to build databases that are
23 capable of sophisticated geo-spatial queries. I have asked Enterprise Wireless Alliance (EWA),
24 an FCC certified frequency coordinator, to conduct a search of all incumbents on the 800 MHz
25 Guard and Expansion band frequencies (80 channels) for each location at issue. For a given
26 location, the search returns the distance (in kilometers) of the nearest incumbent for each

1 channel. If the nearest incumbent is more than 113 km away from the license location, the
2 channel is available with no restriction on effective radiated power (“ERP,” commonly referred
3 to as power). If the nearest incumbent is within 113 km but farther than 88 km, the channel is
4 available, but at a reduced ERP as referenced in the Short Spacing table in FCC Rule Section
5 90.621(b). Lastly, if the nearest incumbent is within 88 km, the channel may be available, but
6 only in a conventional shared capacity or with permission from the existing incumbent and after
7 contour studies have been conducted to ensure that there will not be any interference.

8 53. I have used the data from EWA’s search to create Exhibit 3. Each row in Exhibit
9 3 represents a channel in the 800 MHz Guard or Expansion bands. The channels at issue that are
10 licensed to a Janus entity appear as white cells with black text that reads, “Janus.” Channels with
11 no incumbents within 113 km appear as white cells with no text. Channels with the nearest
12 incumbent located farther than 88 km but closer than or equal to 113 km appear as white cells
13 with a grey number. The grey number represents the exact distance of the closest incumbent on
14 that channel for that location. Similarly, channels with the nearest incumbent located within 88
15 km are represented as red cells with the distance of the nearest incumbent in black text. The first
16 row in the table is titled, “Farthest Incumbent,” and it represents the distance farthest incumbent
17 for that location.

18 There are unclaimed Guard Band licenses in most of the same markets as the licenses at
19 issue. Consequently, anyone with a business model to monetize Guard Band licenses—whether
20 through selling to a carrier or developing a push-to-talk focused business—would never pay
21 more for access to spectrum in these markets than the costs of acquiring one of the unused
22 licenses at the FCC. In the remaining markets, potential licensees may be able to negotiate
23 agreements or provide contour analyses demonstrating their ability to coexist with the
24 incumbents. But even if unable to acquire a new license from the FCC, no one would pay more
25 for a license than they would have to pay an existing licensee to relinquish their license. That is,
26

1 the value of these licenses would never be more than the value of the least valuable existing
2 license.

3 There are many reasons to believe the opportunity cost of these licenses would not be
4 significant. First of all, there are many alternative bands available to meet the business needs of
5 licensees in the Guard and Expansion Bands, suggesting the value of these licenses could not be
6 very high. That is, there were likely alternatives outside of the Guard and Expansion bands
7 where spectrum was available for nominal fees that would meet legitimate business needs. In
8 addition, the licenses were site licenses and only for limited areas (at most a circle of 20
9 kilometer diameter) and therefore much less valuable than area licenses, such as those sold in
10 FCC auctions. Furthermore, the limited number of channels at issue (one or two in each market)
11 would further depress their value.

12 57. In contrast to the current situation, when licenses have significant economic value, the
13 FCC auctions them. An exemplar of a valuable license is that multiple entities want the license
14 or in the language of economics there is excess demand for the license. Multiple parties wanting
15 a license would create mutually exclusive applications for spectrum licenses. When the FCC
16 expects mutually exclusive applications, they are required to auction the spectrum. According to
17 the FCC,

18 The [1997 Budget] Act requires the FCC to use auctions to resolve mutually
19 exclusive applications for initial licenses unless certain exemptions apply,
20 including exemptions for public safety radio services, digital television licenses to
replace analog licenses, and non-commercial educational and public broadcast
stations.⁶⁴

21 The fact that the FCC did not auction the Guard and Expansion Band licenses is evidence of the
22 lack of excess demand for the licenses and supports my conclusion that they are of only nominal
23 value.

24
25
26 ⁶⁴ FCC, “About Auctions,” accessed May 12, 2016,
http://wireless.fcc.gov/auctions/default.htm?job=about_auctions&page=1.

1 54. Further support for lack of value for the Guard and Expansion Band licenses can
2 be found in the numerous alternative spectrum bands that could be used to provide similar
3 services.⁶⁵ The FCC’s website lists ten separate bands of spectrum, all below 1 GHz, available
4 for Industrial/Business services.⁶⁶ No legitimate business case was developed that required the
5 Expansion and Guard Band licenses that could not be met by alternative frequencies offered by
6 the FCC.

7 55. As noted below, the Defendants significantly over charged for the services they
8 provided. A more reasonable cost of acquiring a Guard Band license is \$500. Consequently, the
9 value of access to the Defendants’ licenses are limited by this amount—the opportunity cost
10 saved by using the Defendants’ licenses instead of applying for a license at the FCC.

11 **V. JANUS CHARGED EXCESSIVE FEES FOR LICENSE APPLICATION**
12 **SERVICES**

13 56. Janus collected \$40,000 per application from investors.⁶⁷

14 57. In an email to Mr. Bank, Mr. Alcorn gave a breakdown of uses for funds from a
15 \$75,000 investment.⁶⁸ Less than 7% (\$5,000) went to the coordinator and for FCC fees. Over
16 33% (\$25,000) went to marketing and commissions, and an additional 13.3% (\$10,000) covered
17 admin, overhead, and profit. Engineering and legal costs accounted for the remaining 46.7%
18 (\$35,000). There is no evidence that this breakdown was ever given to potential investors. If the
19 application fees were not excessive, Janus would not have been able to allocate such large
20 portions to marketing and commissions and overhead and profits.

23 ⁶⁵ “EWA offers frequency selection and FCC application processing services for
24 Industrial/Business and Public Safety in the 30 to 900 MHz bands,” accessed May 12, 2016,
<https://www.enterprisewireless.org/service-area/filing-assistance>.

25 ⁶⁶ FCC, “Industrial/Business,” accessed on May 12, 2016,
http://wireless.fcc.gov/services/index.htm?job=service_home&id=industrial_business.

26 ⁶⁷ Muttalib Decl., Ex. 211 (“Janus Spectrum Application Services Agreement”).

⁶⁸ Muttalib Decl., Ex. 235 (Email from David Alcorn to Daryl Bank).

1 **A. What the Services Actually Cost to Provide**

2 58. The actual cost of the application and frequency coordination (including the
3 associated engineering) was significantly lower than the \$40,000 they charged investors for these
4 services.⁶⁹ For 18 applications for 112 frequencies, Janus paid a total of \$40,980.⁷⁰ FCC filing
5 fees for each application were \$410, and the frequency coordination fee for each frequency was
6 \$300⁷¹. In other words, Janus Spectrum's actual application costs were approximately \$3,000
7 per license, far less than the \$40,000/license Janus charged investors.

8 59. The FCC requires that frequency coordinators submit the application package.
9 The required FCC forms are FCC 601: FCC Application for Radio Service Authorization and
10 FCC 159: Remittance Advice.⁷² The FCC Filing Fee guide requires two fees: an application
11 payment of \$60 and a regulatory payment of \$350 per call sign.⁷³ The FCC lists approved
12 frequency coordinators on their website.⁷⁴ Many of these frequency coordinators list their
13 charges on their respective websites. Form 601 fees are on the order of \$250 to \$500 per
14 frequency pair per location.⁷⁵ Some coordinators may charge processing or administrative fees

16 ⁶⁹ Muttalib Decl., Ex. 385 (Email from Tripp Forrest at Tusa Consulting to Peter Moncure
17 and David Alcorn); Ex. 386 (Email from Peter Moncure to Tripp Forrest), Ex. 391 (Email
18 between Peter Moncure and David Alcorn), Exhibit 392 (Radio Soft invoice).

18 ⁷⁰ Muttalib Decl., Ex. 385 (Email from Tripp Forrest at Tusa Consulting to Peter Moncure
19 and David Alcorn), Ex. 386 (Email from Peter Moncure to Tripp Forrest).

19 ⁷¹ Muttalib Decl., Ex. 385 (Email from Tripp Forrest at Tusa Consulting to Peter Moncure
20 and David Alcorn), Ex. 386 (Email from Peter Moncure to Tripp Forrest).

21 ⁷² The licenses at issue in this case are those with Radio Service Codes of GM, GB, YB, or
22 YX. These codes are all classified as Site-Specific Land Mobile and require the FCC 601 (see
23 pp. 7-8). FCC 159 is paperwork that must be included with any remittance to the FCC.

23 ⁷³ FCC, "Wireless Telecommunications Bureau Fee Filing Guide," p. 22, accessed May 12,
24 2016, https://apps.fcc.gov/edocs_public/attachmatch/DOC-316015A1.pdf.

24 ⁷⁴ The FCC's Frequency Coordinator list is located at
25 http://wireless.fcc.gov/services/index.htm?job=licensing_3&id=industrial_business. The relevant
26 grouping is 800/900 MHz Coordinators.

26 ⁷⁵ See, for example: "MRFAC Services – Effective October 1, 2012," MRFAC, Inc.,
accessed May 12, 2016, <http://www.mrfac.com/ServiceFees.shtml>; "Schedule of Services,"
Enterprise Wireless Alliance, accessed May 12, 2016,
https://www.enterprisewireless.org/resources/schedule_services; "Fees," Forest Industries

1 on the order of \$200.⁷⁶ All of these fees are orders of magnitude smaller than what Defendants
2 charged clients.

3 I declare under penalty of perjury under the laws of the United States of America that the
4 foregoing is true and correct.

5 Executed this 6th day of October 2016 in Washington, D.C.
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11 Coleman Bazelon
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24 Telecommunications, accessed May 12, 2016, http://fcclicense.org/fit/?page_id=73; “Fee
25 Schedule,” PCIA, accessed May 12, 2016, [http://www.pcia.com/frequency-coordination/fee-](http://www.pcia.com/frequency-coordination/fee-schedule)
[schedule](http://www.pcia.com/frequency-coordination/fee-schedule).

26 ⁷⁶ See, for example: “MRFAC Services – Effective October 1, 2012,” MRFAC, Inc.,
accessed May 12, 2016, <http://www.mrfac.com/ServiceFees.shtm>.

1 **PROOF OF SERVICE**

2 I am over the age of 18 years and not a party to this action. My business address is:

3 U.S. SECURITIES AND EXCHANGE COMMISSION,
4 444 S. Flower Street, Suite 900, Los Angeles, California 90071
Telephone No. (323) 965-3998; Facsimile No. (213) 443-1904.

5 On October 7, 2016, I caused to be served the document entitled **DECLARATION**
6 **OF COLEMAN BAZELON IN SUPPORT OF PLAINTIFF SECURITIES AND**
7 **EXCHANGE COMMISSION'S MOTION FOR SUMMARY JUDGMENT** on
all the parties to this action addressed as stated on the attached service list:

8 ☒ **OFFICE MAIL:** By placing in sealed envelope(s), which I placed for
collection and mailing today following ordinary business practices. I am readily
9 familiar with this agency's practice for collection and processing of correspondence
for mailing; such correspondence would be deposited with the U.S. Postal Service on
the same day in the ordinary course of business.

10 ☐ **PERSONAL DEPOSIT IN MAIL:** By placing in sealed envelope(s),
11 which I personally deposited with the U.S. Postal Service. Each such envelope was
deposited with the U.S. Postal Service at Los Angeles, California, with first class
12 postage thereon fully prepaid.

13 ☐ **EXPRESS U.S. MAIL:** Each such envelope was deposited in a facility
regularly maintained at the U.S. Postal Service for receipt of Express Mail at Los
14 Angeles, California, with Express Mail postage paid.

15 ☐ **HAND DELIVERY:** I caused to be hand delivered each such envelope to the
office of the addressee as stated on the attached service list.

16 ☐ **UNITED PARCEL SERVICE:** By placing in sealed envelope(s) designated
17 by United Parcel Service ("UPS") with delivery fees paid or provided for, which I
deposited in a facility regularly maintained by UPS or delivered to a UPS courier, at
18 Los Angeles, California.

19 ☒ **ELECTRONIC MAIL:** By transmitting the document by electronic mail to
the electronic mail address as stated on the attached service list.

20 ☒ **E-FILING:** By causing the document to be electronically filed via the Court's
21 CM/ECF system, which effects electronic service on counsel who are registered with
the CM/ECF system.

22 ☐ **FAX:** By transmitting the document by facsimile transmission. The
23 transmission was reported as complete and without error.

24 I declare under penalty of perjury that the foregoing is true and correct.

25 Date: October 7, 2016

/s/ Donald W. Searles

Donald W. Searles

1 **SEC v. Janus Spectrum LLC, et al.**
2 **United States District Court – District of Arizona**
3 **Case No. 2:15-CV-00609-SMM**
4 **(LA-4280)**

5 **SERVICE LIST**

6 Thomas E. Littler, Esq. *(served via CM/ECF and electronic mail)*
7 341 W Secretariat Drive
8 Tempe, AZ 85284
9 Email: telittler@gmail.com
10 *Attorney for Defendant Janus Spectrum LLC and David Alcorn*

11 Kent Maerki *(served via electronic mail and U.S. mail)*
12 10632 N. Scottsdale Road
13 Suite B479
14 Scottsdale, AZ 85254
15 Email: kentmaerki@gmail.com
16 *Defendant Pro Per*

17 Keith Beauchamp, Esq. *(served via CM/ECF and electronic mail)*
18 Coppersmith Brockelman PLC
19 2800 North Central Avenue, Suite 1200
20 Phoenix, AZ 85004
21 Email: kbeauchamp@cblawyers.com
22 *Attorneys for Defendants Daryl G. Bank and the Dominion Entities*

23 Thomas A. Sporkin, Esq. *(served via CM/ECF and electronic mail)*
24 Timothy J. Coley, Esq. *(served via CM/ECF and electronic mail)*
25 BuckleySandler LLP
26 1250 24th Street NW, Suite 700
27 Washington, DC 20037
28 Email: tsporkin@buckleysandler.com
Email: tcoley@buckleysandler.com
Attorneys for Defendants Daryl G. Bank and the Dominion Entities

James M. McGee, Esq. *(served via CM/ECF and electronic mail)*
Dennis L Roossien, Jr., Esq. *(served via CM/ECF and electronic mail)*
Phillip C. Appenzeller, Esq. *(served via CM/ECF and electronic mail)*
Munsch Hardt Kopf & Harr, PC
500 N. Akard Street, Suite 3800
Dallas, TX 75201-6659
Email: jmcgee@munsch.com
Email: droossien@munsch.com
Email: pappenzeller@munsch.com
Attorneys for Defendants Terry W. Johnson; Raymon G. Chadwick, Jr.; Innovative Group, PMA; Premier Group, PMA; and Prosperity Group, PMA

Bobby D. Jones *(served via electronic mail and U.S. mail)*
15920 NE 15th Street
Bellevue, WA 98008
Email: jobbybones@me.com
Defendant Pro Per

1 Premier Spectrum Group, PMA *(served via electronic mail only)*
2 c/o Bobby D. Jones
3 15920 NE 15th Street
4 Bellevue, WA 98008
5 Email: jobbybones@me.com
6 *Defendant Pro Per*
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SEC v. Janus Spectrum LLC, et al.
United State District Court – District of Arizona
Case No. 2:15-cv-00609-SMM

Index of Exhibits to the Declaration of Coleman Bazelon

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EXHIBIT 1

Dr. Coleman Bazelon is a Principal in the Washington, D.C. office of *The Brattle Group*. He is an expert in regulation, strategy and valuation in the wireless, wireline, and video sectors. He has consulted and testified on behalf of clients in numerous telecommunications matters, ranging from wireless license auctions, spectrum management, and competition policy, to patent infringement, business valuation, and broadband deployment.

Dr. Bazelon frequently advises regulatory and legislative bodies, including the U.S. Federal Communications Commission and the U.S. Congress. He also has expertise in the federal government's use of discount rates for policy and regulatory analysis, intellectual property valuation, economic impact analysis, and antitrust and damages analysis.

Throughout his career, Dr. Bazelon has had extensive experience with spectrum license auctions. He advises on and evaluates numerous auction designs and regularly serves as an auction advisor for bidders in spectrum license auctions.

Prior to joining *Brattle*, Dr. Bazelon was a Vice President with Analysis Group, an economic and strategy consulting firm. During that time, he expanded the firm's telecommunications practice area. He also served as a Principal Analyst in the Microeconomic and Financial Studies Division of the Congressional Budget Office where he researched reforms of radio spectrum management; estimated the budgetary and private sector impacts of spectrum-related legislative proposals; and advised on auction design and privatization issues for all research at the CBO.

SELECTED CONSULTING PROJECTS

Litigation

- Estimated value of a spectrum portfolio.
- Developed auction format for sale of private equity management firm.
- Estimated racial impact of voter ID law in Texas.
- Assessed Domestic Industry requirement in ITC 337 case involving mobile location patents.
- Evaluated damages in the applications market.
- Assessed allocation theories in an international bankruptcy.
- Evaluated damages from a programming contract termination.
- Evaluated damages from allegations of reputational harm in gaming equipment market.
- Evaluated damages from non-working wireless network equipment.
- Assessed Domestic Industry requirement in ITC 337 case involving wireless equipment patents.
- Assessed commercial viability of full text searching of books business model.

- Assessed Domestic Industry requirement in ITC 337 case involving portable storage device patents.
- Estimated value of satellite assets in bankruptcy.
- Estimated damages from denial of pole attachments.
- Provided written testimony evaluating the performance of a numbering resource administrator.
- Provided written testimony on the ability to estimate damages for a class of satellite phone users.
- Provided written testimony on the economic value of Rights-of-Ways in Massachusetts.
- Estimated damages for a broadcast tower permit revocation.
- Provided oral testimony on the proprietary nature of specific information contained in a statewide public safety network bid.
- Provided written testimony on economic value associated with items provided in a labor neutrality agreement.
- Estimated damages associated with USF and other telephone taxes paid by a calling card reseller.
- Assessed the damages associated with the infringement of patents related to VoIP technology and the likely impact of a permanent injunction.
- Estimated recoverable data costs for two pesticides.
- Estimated cost of delay in granting local cable franchise.
- Analyzed the economic underpinnings of an exclusivity clause of a mobile phone affiliation agreement.
- Assessed commonality issues of physicians for class certification of RICO action against a set of health insurance companies.
- Estimated “Loss of Use” damages for a severed fibre optic cable.
- Provided written testimony estimating the value of a surety bond in a contract dispute involving toll free phone numbers used in an enhanced service application.
- Assessed damages associated with infringement of patents used to provide Voice over Internet Protocol (VoIP).
- Assessed basis for guidance of a large telecommunications firm in a 10-b securities litigation.
- Valued digital television radio spectrum in St. Louis in the pre-litigation phase of a breach of contract dispute.
- Estimated damages in a breach of contract case involving the sale of a fibre optic network.
- Researched the basis for generally optimistic forecasts of broadband deployment in the later 1990s and early 2000s in an anti-trust litigation.
- Researched the basis for generally optimistic beliefs about the telecommunications sector in the late 1990s in a 10-b securities litigation.
- Assessed the market for Competitive Local Exchange Carriers in an SEC fraud case.
- Assessed a bankruptcy sale proposal for a national tier 1 broadband backbone provider.
- Examined the business case asserted for a small wireless reseller in a breach of contract litigation.

- Assessed damages associated with infringement of patents used in DNA fingerprinting applications.
- Assessed changes in contributions to the Cable Royalty Fund on behalf of Sports Claimants in a Copyright Arbitration Royalty Panel (CARP) proceeding.
- Assessed the capital adequacy of the U.S. branch of a foreign bank.

Regulatory Proceedings

- Provided declaration on minority incentives in spectrum secondary market transactions.
- Evaluated proposed pole attachment rate.
- Analyzed cost[s] of USPS.
- Assessed impact on incentive auction of unlicensed operations in guard bands.
- Assessed market power in Canadian wireless market.
- Provided testimony in prison phone rate proceeding.
- Estimated economic impact of LNP on RLECs.
- Assessed relevance of U.S. UNE-L experience for New Zealand benchmarking proceeding.
- Authored analysis of harm from revoking LightSquared's ATC authorization.
- Estimated value of pairing Upper 700 MHz A Block with public safety.
- Estimated impact of increased regulatory uncertainty on spectrum value.
- Estimated value of government provision of GPS service to private industry.
- Coauthored analysis of feasibility of reallocating broadcast television through the use of incentive auctions.
- Analyzed impact on spectrum value of pairing AWS III spectrum.
- Coauthored analysis of the merits of licensed versus unlicensed allocation of the TV White Spaces.
- Estimated the value of TV White Spaces.
- Provided written testimony on the economic harm of using proprietary information in retention marketing.
- Provided written testimony on the economics of pole attachment rates.
- Estimated the value of the PCS H-Block spectrum band.
- Estimated the economic impact of ITC Exclusion Order on cell phone handsets.
- Authored several reports on the 700 MHz auction rules.
- Analyzed the relationship between the size of cable systems and the economics of the programming market.
- Presented analysis on pricing differentials in overlapping cable markets.
- Assessed proposed regulation of mobile phone roaming rates.
- Analyzed impact of local franchise requirements on competition in the video marketplace.
- Developed and assessed Indian spectrum management proposals.
- Analyzed economic ramifications of à la carte cable channel pricing on consumers and the cable and television programming industries.

Coleman Bazelon

- Examined the relative merits of licensed versus unlicensed radio spectrum and the effects of “underlay” licenses on existing commercial licensees.
- Examined federalism issues related to mobile telephony regulation.
- Examined and refuted arguments suggesting that the California Telecommunications Consumer Bill of Rights was an appropriate response to market failures.
- Assessed the impact on consumers of California’s Telecommunications Consumer Bill of Rights proposal.
- Provided written testimony refuting analysis purporting to show a positive relationship between UNE-P and telecom network investment.
- Provided written testimony examining the effects of unbundling regulations on capital spending in the telecommunications sector.
- Estimated the adjustment to the TELRIC pricing formula to account for irreversible investment in the local telephone network.
- Examined the impact of irreversible investments in the local telephone network on the TELRIC pricing methodology.
- Assessed the degree of market overlap of two food service firms for purposes of merger review.
- Provided written testimony that assessed the validity of an analysis of the costs of a DTV tuner mandate.
- Provided written testimony of a forecast of toll free number demand for the toll free number administrator, SMS/800, in a rate case proceeding.

Other

- Evaluated impacts of Boston 2024’s Olympic bid.
- Estimated value of licensed mobile broadband spectrum.
- Estimated future needs for licensed mobile broadband spectrum.
- Advised bidder in Canadian 700 MHz auction.
- Evaluated performance of TV stations when repacked in an Incentive Auction.
- Analyzed differences in U.S. and European wireless markets.
- Assessed business case and value of HF license holder.
- Analyzed likely auction outcomes for TV broadcaster participating in incentive auction.
- Assessed value of commercial mobile spectrum bands.
- Analyzed economic impacts of the commercial casino industry.
- Evaluated impact of digitization on copyright industries.
- Analyzed economic and employment effects of Dutch gas hub.
- Advised bidder in Indian 3G spectrum license auction.
- Estimated economic and employment effects of network neutrality regulation.
- Analyzed relative costs of wireless and wireline deployments in rural areas.
- Analyzed potential harms from Internet gambling.
- Estimated economic value of reallocating TV spectrum for wireless broadband.
- Estimated economic and employment effects of electric power transmission construction in support of new wind generation facilities.

Coleman Bazelon

- Estimated economic and employment effects of broadband stimulus grant applications.
- Estimated employment effects of an ATC-mobile satellite network deployment.
- Analyzed the impact of reducing international mobile phone roaming charges.
- Developed an auction platform for an electricity procurement auction.
- Analyzed the economic impacts of reduced mobile phone taxes in Africa and the Middle East.
- Evaluated the impact of reducing ethanol requirements on gasoline prices.
- Analyzed FRAND licensing requirements for intellectual property in the DTV standard.
- Advised bidder in Canadian AWS spectrum license auction.
- Advised bidder in FCC 700 MHz spectrum license auction.
- Evaluated a business plan for proposed dam removals.
- Assessed a business plan involving the WiMAX market.
- Estimated the value of a portfolio of spectrum licenses.
- Assessed the budgetary impacts of legislation to license TV white spaces.
- Analyzed the economics of the military's build versus buy decision for broadband satellite communications capacity.
- Advised bidder in FCC AWS spectrum license auction.
- Provided framework to estimate impact of the effect of designation of TV white spaces as unlicensed on 700 MHz auction receipts.
- Analyzed Universal Service Fund expenditures.
- Analyzed cable franchising requirements.
- Valued proposals to re-band the Upper 700 MHz Band of radio spectrum.
- Analyzed proposed accelerated digital television transition impacts on society and the federal budget.
- Coauthored a report on the value of a portfolio of patents used to provide Voice over Internet Protocol (VoIP).
- Coauthored a report to the U.S. Chamber of Commerce on the economic effects of telecommunications deregulation.
- Assessed the business cases for IRU swaps of a large international fibre optic network owner.
- Examined the effects of unbundling regulations on broadband penetration internationally.

TESTIMONY AND DECLARATIONS

“Amended Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Sprint Corporation, Sprint Communications, Inc., Erik Prusch, John W. Stanton, William R. Blessing, Bruce A. Chatterley, Mufit Cinali, Jose A. Collazo, Hossein Eslambolchi, Dennis S. Hersch, Brian P. McAndrews, Kathleen H. Rae, Theodore H. Schell, Jennifer L. Vogel, Slade Gorton, Starburst I, Inc., and Softbank Corp., Court of Chancery, State of Delaware, C.A. No. 8508-VCL and ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Clearwire Corporation, Court of Chancery, State of Delaware, C.A. No. 9042-VCL, November 2, 2015.

“Rebuttal Report of Coleman Bazelon, Ph.D.,” In the Matter of ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Sprint Corporation, Sprint Communications, Inc., Erik Prusch, John W. Stanton, William R. Blessing, Bruce A. Chatterley, Mufit Cinali, Jose A. Collazo, Hossein Eslambolchi, Dennis S. Hersch, Brian P. McAndrews, Kathleen H. Rae, Theodore H. Schell, Jennifer L. Vogel, Slade Gorton, Starburst I, Inc., and Softbank Corp., Court of Chancery, State of Delaware, C.A. No. 8508-VCL and ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Clearwire Corporation, Court of Chancery, State of Delaware, C.A. No. 9042-VCL, October 23, 2015.

“Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Sprint Corporation, Sprint Communications, Inc., Erik Prusch, John W. Stanton, William R. Blessing, Bruce A. Chatterley, Mufit Cinali, Jose A. Collazo, Hossein Eslambolchi, Dennis S. Hersch, Brian P. McAndrews, Kathleen H. Rae, Theodore H. Schell, Jennifer L. Vogel, Slade Gorton, Starburst I, Inc., and Softbank Corp., Court of Chancery, State of Delaware, C.A. No. 8508-VCL and ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Clearwire Corporation, Court of Chancery, State of Delaware, C.A. No. 9042-VCL, September 25, 2015.

“Expert Rebuttal Report on Domestic Industry of Coleman Bazelon, Ph.D.,” In the Matter regarding Certain Non-Volatile Memory Chips and Products Containing the Same, Investigation No. 337-TA-916, December 15, 2014.

“Expert Report on Remedy and Bonding of Coleman Bazelon, Ph.D.,” In the Matter regarding Certain Non-Volatile Memory Chips and Products Containing the Same, Investigation No. 337-TA-916, December 15, 2014.

“Expert Report on Public Interest of Coleman Bazelon, Ph.D.,” In the Matter regarding Certain Non-Volatile Memory Chips and Products Containing the Same, Investigation No. 337-TA-916, November 24, 2014.

“Expert Report of Coleman Bazelon, Ph.D.,” In the Matter regarding Wynnchurch Capital Ltd., In the Court of Chancery of the State of Delaware, C.A. No. 10077-VCL, November 7, 2014.

“Third Amended Reply Report of Coleman Bazelon, Ph.D.,” On Behalf of Plaintiff-Intervenors Texas League of Young Voters Education Fund and Imani Clark, United States District Court for the Southern District of Texas Corpus Christi Division, Civ. No. 2:13-cv-00263, September 22, 2014.

“Reply Report of Coleman Bazelon, Ph.D.,” On Behalf of Plaintiff-Intervenors Texas League of Young Voters Education Fund and Imani Clark, United States District Court for the Southern District of Texas Corpus Christi Division, Civ. No. 2:13-cv-193 (NGR), August 15, 2014.

“Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of the Texas League of Young Voters Education Fund and Imani Clark v. State of Texas, Nandita Berry, in her official capacity as Texas Secretary of State; and Steve McGraw, in his official capacity as Director of the Texas Department of Public Safety, United States District Court for the Southern District of Texas Corpus Christi Division, Civ. No. 2:13-cv-00263, June 27, 2014.

“Rebuttal Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of the Companies’ Creditors Arrangement Act, R.S.C. 1985, c. C-36, As Amended, and in the Matter of a Plan of Compromise or Arrangement of Nortel Networks Corporation, Nortel Networks Limited, Nortel Networks Global Corporation, Nortel Networks International Corporation and Nortel Networks Technology Corporation United States Bankruptcy Court for the District of Delaware, Case No. 09-10138 (KG), February 28, 2014.

“Supplemental Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of Sky Angel U.S., LLC, against Discovery Communications, LLC, Animal Planet, LLC, United States District Court for the District of Maryland, Case No. 8:13-cv-00031-DKC, January 31, 2014.

“Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of the Companies’ Creditors Arrangement Act, R.S.C. 1985, c. C-36, As Amended, and in the Matter of a Plan of Compromise or Arrangement of Nortel Networks Corporation, Nortel Networks Limited, Nortel Networks Global Corporation, Nortel Networks International Corporation and Nortel Networks Technology Corporation United States Bankruptcy Court for the District of Delaware, Case No. 09-10138 (KG), January 24, 2014.

“Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of Sky Angel U.S., LLC, against Discovery Communications, LLC, Animal Planet, LLC, United States District Court for the District of Maryland, Case No. 8:13-cv-00031-DKC, December 6, 2013.

“Expert Report of Coleman Bazelon, Ph.D. and Armando Levy, Ph.D.,” In the Matter of LT Game International Ltd., against Shuffle Master, Inc., United States District Court for the District of Nevada, Case No. 2:12-cv-01216-JAD-GWF, October 4, 2013.

“Expert Report of Coleman Bazelon, Ph.D.,” In the Matter of Certain Electronic Devices, Including Wireless Communications Devices, Tablet Computers, Media Players, and Televisions, and Components Thereof, United States International Trade Commission, Investigation No. 337-TA-862 (Judge Shaw), July 5, 2013.

“Declaration of Coleman Bazelon” In the Matter of PTA-FLA, Inc, Daredevil, Inc., NTCH-WEST TENN., Inc., NTCH-WA, Inc., and Eric Steinmann against ZTE Corporation, and ZTE USA, Inc. Florida Arbitration, Case No.: 50-494-T-00665-11, February 26, 2013.

“Rebuttal Testimony of Coleman Bazelon,” In re: Petition for Suspension or Modification of Application of the Requirements of 47 U.S.C. § 251(b) and (c), pursuant to 47 U.S.C. § 251(f)(2) regarding Time Warner Cable Information Services (Maine) LLC’s Request, State of Maine Public Utilities Commission, Docket No. 2012-198, Docket No. 2012-218, Docket No. 2012-219, Docket No. 2012-220, Docket No. 2012-221, October 12, 2012.

“Testimony of Coleman Bazelon, Ph.D.,” In re: Petition for Suspension or Modification of Application of the Requirements of 47 U.S.C. § 251(b) and (c), pursuant to 47 U.S.C. § 251(f)(2) regarding Time Warner Cable Information Services (Maine) LLC’s Request, State of Maine Public Utilities Commission, Docket No. 2012-198, Docket No. 2012-218, Docket No. 2012-219, Docket No. 2012-220, Docket No. 2012-221, August 20, 2012.

“Expert Report of Dr. Coleman Bazelon,” *Salsgiver Communications, Inc., Salsgiver Telecom, Inc., and Salsgiver Inc. v. Consolidated Communications Holdings, Inc., North Pittsburgh Systems, Inc., and North Pittsburgh Telephone Company, Inc.*, Court of Common Pleas, Allegheny County, Pennsylvania, Civil Division, No. GD 08-7616, May 10, 2012.

“Effect of the Proposed Merger on Service Quality, Consumer Services, Employment, and California’s Economy,” Panelist on behalf of AT&T before the Public Utilities Commission of the State of California, Order Instituting Investigation on the Commissioner’s Own Motion into the Planned Purchase and Acquisition by AT&T Inc. of T-Mobile USA, Inc., and Its Effect on California Ratepayers and the California Economy. Case No. I.11-06-009, July 22, 2011.

“Oral Testimony of Coleman Bazelon, The Brattle Group, Inc. before the U.S. House of Representatives, Committee on Energy and Commerce Subcommittee on Communication and Technology,” April 12, 2011. (spectrum)

“Testimony of Coleman Bazelon, Principal, *The Brattle Group*, before the U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Communications, Technology, and the Internet,” June 17, 2010 (spectrum valuation).

“Supplemental Expert Report of Coleman Bazelon,” *Gemalto PTE LTD and Gemplus S.A. v. Telecommunications Industry Association*, United States District Court for the Eastern District of Virginia, Alexandria Division, Case 1:08-cv-00776-LMB-TRJ, December 16, 2008.

“Expert Report of Coleman Bazelon,” *Gemalto PTE LTD and Gemplus S.A. v. Telecommunications Industry Association*, United States District Court for the Eastern District of Virginia, Alexandria Division, Case 1:08-cv-00776-LMB-TRJ, November 6, 2008.

“Prefiled Rebuttal Testimony of Coleman D. Bazelon,” In re: Complaint and Request for Emergency Relief Against Verizon Florida LLC for anticompetitive behavior in violation of Sections 364.01(4), 364.3381, and 364.10, F.S., and for failure to facilitate transfer of customers’ numbers to Bright House Networks Information Services (Florida) LLC, and its affiliate, Bright House Networks, LLC, Florida Public Service Commission, Docket No. 070691-TP, July 25, 2008.

“Prefiled Direct Testimony of Coleman D. Bazelon,” In re: Complaint and Request for Emergency Relief Against Verizon Florida LLC for anticompetitive behavior in violation of Sections 364.01(4), 364.3381, and 364.10, F.S., and for failure to facilitate transfer of customers’ numbers to Bright House Networks Information Services (Florida) LLC, and its affiliate, Bright House Networks, LLC, Florida Public Service Commission, Docket No. 070691-TP, May 30, 2008.

“Declaration of Coleman Bazelon in Support of Plaintiffs’ Motion for Class Certification,” *Kenneth Stickrath, et al v. Globalstar, Inc.*, United States District Court for the Northern District of California, San Francisco Division, Case No. 07-CV-01941 TEH, April 25, 2008.

“Testimony of Coleman Bazelon, Principal, *The Brattle Group*, before the U.S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet,” April 15, 2008 (reviewing the 700 MHz auction).

“Concerning the Meaning of ‘Fair and Reasonable Compensation’ in Section 253(c) of the Telecommunications Act of 1996 and the Comparability of the Rights-of-Way Fees Paid by Level 3 in Massachusetts and Elsewhere,” *The Massachusetts Turnpike Authority v. Level 3 Communications, LLC, et al.*, The United States District Court for the District of Massachusetts, Civ. Act. No. 06-11816, December 17, 2007.

“Concerning the Effects of the Fixed Rent Charged for Access to the Massachusetts Turnpike,” *The Massachusetts Turnpike Authority v. Level 3 Communications, LLC, et al.*, The United States District Court for the District of Massachusetts, Civ. Act. No. 06-11816, November 12, 2007.

“Affidavit of Dr. Coleman Bazelon,” *Gulfside Casino Partnership v. Mississippi Riverboat Council, et al.*, United States District Court for the Southern District of Mississippi, Southern Division, Cause No. 1:07-CV-110-LG-JMR, May 4, 2007.

“Rebuttal Report of Dr. Coleman Bazelon,” *Level 3 Communications, LLC, v. City of St. Louis, Missouri*, United States District Court for the Eastern District of Missouri, Eastern Division, Consolidated Case No. 4:04-CV-871 CAS, June 17, 2005.

“Affidavit of Dr. Coleman Bazelon,” *Informed Communications Systems, Inc. v. Intelogistics Corp., d/b/a Prosodie Interactive*, United States District Court, Southern District of Florida, Miami Division, Case No.: 04-61245 CIV Huck/Turnoff (October 12, 2004).

EXPERT DESIGNATIONS

- *Touch America, Inc. v. Qwest Communications International, Inc.*
 - Designated as an expert in Arbitration (June 2003)
- *Informed Communications Systems, Inc. v. Intelogistics Corp., d/b/a Prosodie Interactive*, United States District Court, Southern District of Florida, Miami Division, Case No.: 04-61245 CIV Huck/Turnoff
 - Filed affidavit (October 12, 2004)
- *Level 3 Communications, LLC v. City of St. Louis, Missouri*, United States District Court for the Eastern District of Missouri, Eastern Division, Consolidated Case No. 4:04-CV-871 CAS
 - Filed Rebuttal Report (June 17, 2005)
 - Deposition (July 14, 2005)
- Cable Merger before the FTC
 - Presented analysis to FTC staff (March 20, 2007)
- *Gulfside Casino Partnership v. Mississippi Riverboat Council, et al.*, United States District Court for the Southern District of Mississippi, Southern Division, Cause No. 1:07-CV-110-LG-JMR
 - Filed affidavit (May 4, 2007)
- *Motorola, Inc. v. State of Mississippi Department of Information Technology Services and M/ACom, Inc.*, Chancery Court of Hinds County, Mississippi, Cause No. G2006-2179 S/2
 - Testified (May 23, 2007)
- *American Towers, Inc. v. Jackson & Campbell, P.C., et al.*, DC Superior Court, No. 003277-06
 - Deposition (March 19, 2009)
 - Filed Affidavit (May 22, 2009)

- *The Massachusetts Turnpike Authority v. Level 3 Communications, LLC, et al.*, The United States District Court for the District of Massachusetts, Civ. Act. No. 06-11816
 - Filed Expert Report (November 12, 2007)
 - Filed Rebuttal Report (December 17, 2007)
 - Deposition (January 21, 2008)
- *Kenneth Stickrath, et al v. Globalstar, Inc.*, United States District Court for the Northern District of California, San Francisco Division, Case No. 07-CV-01941 THE
 - Filed Declaration (April 25, 2008)
 - Deposition (June 11, 2008)
- In re: Complaint and request for emergency relief against Verizon Florida LLC for anticompetitive behavior in violation of Sections 364.01(4), 364.3381, and 364.10, F.S., and for failure to facilitate transfer of customers' numbers to Bright House Networks Information Services (Florida) LLC, and its affiliate, Bright House Networks, LLC, Florida Public Service Commission, Docket No. 070691-TP
 - Filed Direct Testimony (May 30, 2008)
 - Filed Rebuttal Testimony (July 25, 2008)
 - Deposition (August 13, 2008)
- *Gemalto PTE LTD and Gemplus S.A. v. Telecommunications Industry Association*, United States District Court for the Eastern District of Virginia, Alexandria Division, Case 1:08-cv-00776- LMB-TRJ
 - Filed Expert Report (November 6, 2008)
 - Deposition (December 2, 2008)
 - Filed Supplemental Expert Report (December 16, 2008)
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 - Filed Damages Analysis (February 27, 2009)
 - Deposition (April 3, 2012)
 - Filed Expert Report (May 10, 2012)
 - Testified (May 6, 2015; May 12, 2015)
- *Certain Products Containing Interactive Program Guide and Parental Control Technology* United States International Trade Commission, Investigation No. 337-TA-820

- Designated as an expert (June 8, 2012)
- In re: Petition for Suspension or Modification of Application of the Requirements of 47 U.S.C. § 251(b) and (c), pursuant to 47 U.S.C. § 251(f)(2) regarding Time Warner Cable Information Services (Maine) LLC's Request, State of Maine Public Utilities Commission, Docket No. 2012-198, Docket No. 2012-218, Docket No. 2012-219, Docket No. 2012-220, Docket No. 2012-221
 - Filed Direct Testimony (August 20, 2012)
 - Filed Rebuttal Testimony (October 12, 2012)
 - Testified (October 23, 2012)
- In the matter of PTA-FLA, Inc , Daredevil, Inc., NTCH-WEST TENN., Inc., NTCH-WA, Inc., and Eric Steinmann against ZTE Corporation, and ZTE USA, Inc. Florida Arbitration, Case No.: 50-494-T-00665-11
 - Filed Expert Report (February 26, 2013)
 - Deposed (March 15, 2013)
 - Testified (August 30, 2013)
- *Certain Electronic Devices, Including Wireless Communications Devices, Tablet Computers, Media Players, and Televisions, and Components Thereof*, United States International Trade Commission, Investigation No. 337-TA-862 (Judge Shaw)
 - Filed Rebuttal Testimony (July 5, 2013)
- In the matter of LT Game International Ltd., against Shuffle Master, Inc., United States District Court for the District of Nevada, Case No. 2:12-cv-01216-JAD-GWF
 - Filed Expert Report (October 4, 2013)
 - Deposed (November 12, 2013)
- In the Matter of Sky Angel U.S., LLC, against Discovery Communications, LLC, Animal Planet, LLC, United States District Court for the District of Maryland, Case No. 8:13-cv-00031-DKC
 - Filed Expert Report (December 6, 2013)
 - Filed Supplemental Report (January 31, 2014)
 - Deposed (February 14, 2014)
- In the Matter of the Companies' Creditors Arrangement Act, R.S.C. 1985, c. C-36, As Amended, and in the Matter of a Plan of Compromise or Arrangement of Nortel Networks Corporation, Nortel Networks Limited, Nortel Networks Global Corporation,

Nortel Networks International Corporation and Nortel Networks Technology Corporation United States Bankruptcy Court for the District of Delaware, Case No. 09-10138 (KG)

- Filed Expert Report (January 24, 2014)
 - Filed Rebuttal Expert Report (February 28, 2014)
 - Deposed (April 3, 2014; May 30, 2014)
 - Testified (June 2, 2014; June 5, 2014)
- *State of Texas v. Eric H. Holder, Jr., in his Official Capacity as Attorney General of the United States*, United States District Court for the District of Columbia, Case No. 1:12-CV-00128
 - Filed Expert Report (June 27, 2014)
 - Filed Reply Report (August 15, 2014)
 - Deposed (August 20, 2014)
 - Testified (September 9, 2014)
 - Filed Third Amended Reply Report (September 22, 2014)
- Certain Wireless Devices, Including Mobile Phones And Tablets II, United States International Trade Commission, Investigation No. 337-TA-905 (Judge Pender)
- Wynnchurch Capital Ltd., In the Court of Chancery of the State of Delaware, C.A. No. 10077-VCL
 - Filed Expert Report (November 7, 2014)
 - Deposed (November 17, 2014)
- In the Matter of: Certain Non-Volatile Memory Chips and Products Containing the Same, United States International Trade Commission, Washington, D.C., Investigation No. 337 TA-916
 - Filed Expert Report on Public Interest (November 24, 2014)
 - Filed Expert Rebuttal Report on Domestic Industry (December 15, 2014)
 - Filed Expert Report on Remedy and Bonding (December 15, 2014)
 - Deposed (January 9, 2015)

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- In the Matter of ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Sprint Corporation, Sprint Communications, Inc., Erik Prusch, John W. Stanton, William R. Blessing, Bruce A. Chatterley, Mufit Cinali, Jose A. Collazo, Hossein Eslambolchi, Dennis S. Hersch, Brian P. McAndrews, Kathleen H. Rae, Theodore H. Schell, Jennifer L. Vogel, Slade Gorton, Starburst I, Inc., and Softbank Corp., Court of Chancery, State of Delaware, C.A. No. 8508-VCL and ACP Master, Ltd., Aurelius Capital Mater, Ltd., and Aurelius Opportunities Fund II, LLC, v. Clearwire Corporation, Court of Chancery, State of Delaware, C.A. No. 9042-VCL
 - Filed Expert Report (September 25, 2015)
 - Filed Rebuttal Report (October 23, 2015)
 - Filed Amended Expert Report (November 2, 2015)
 - Deposed (November 10, 2015)

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REVIEWER

- American Journal of Agricultural Economics (1989 – 1994)
- Congressional Budget Office Reports
- Telecommunications Policy
- Telecommunications Policy Research Conference Program Committee (2011-2013)
- George Mason University

PROFESSIONAL AFFILIATIONS

- American Bar Association

Coleman Bazelon

- American Economic Association
- Federal Communications Bar Association
- National Research Council - Committee on a Survey of the Active Scientific Use of the Radio Spectrum

EDUCATION

Dr. Bazelon received his Ph.D. and M.S. in Agricultural and Resource Economics from the University of California at Berkeley. He also holds a Diploma in Economics from the London School of Economics and Political Science and a B.A. from Wesleyan University.

May 2, 2016

EXHIBIT 2

Exhibit 2: Frequencies At Issue

Call Sign	Service Class	Channel	City	County	State	Band
Janus Spectrum Group						
WQTI782	GM	514	Crystal	Hennepin	MN	Guard Band
WQTI782	GM	523	Crystal	Hennepin	MN	Guard Band
WQTI782	GM	545	Holdingford	Stearns	MN	Guard Band
WQTI782	GM	545	Baxter	Crow Wing	MN	Guard Band
WQTI794	GM	521	Lakewood	Jefferson	CO	Guard Band
WQTI794	GM	521	Glenwood Springs	Garfield	CO	Guard Band
WQTI794	GM	542	Glenwood Springs	Garfield	CO	Guard Band
WQUX291	YX	517	Portage	Columbia	WI	Guard Band
WQUX291	YX	525	Portage	Columbia	WI	Guard Band
WQUX291	YX	533	Portage	Columbia	WI	Guard Band
WQUX291	YX	541	Portage	Columbia	WI	Guard Band
WQUX291	YX	549	Portage	Columbia	WI	Guard Band
WQUX291	YX	517	Monticello	Green	WI	Guard Band
WQUX291	YX	525	Monticello	Green	WI	Guard Band
WQUX291	YX	533	Monticello	Green	WI	Guard Band
WQUX291	YX	541	Monticello	Green	WI	Guard Band
WQUX291	YX	549	Monticello	Green	WI	Guard Band
WQVN336	GM	517	Clayton	St. Louis	MO	Guard Band
WQVN336	GM	525	Clayton	St. Louis	MO	Guard Band
WQVN336	GM	533	Clayton	St. Louis	MO	Guard Band
WQVN336	GM	541	Clayton	St. Louis	MO	Guard Band
WQVN336	GM	549	Clayton	St. Louis	MO	Guard Band
WQVP573	GM	517	Kansas City	Jackson	MO	Guard Band
WQVP573	GM	525	Kansas City	Jackson	MO	Guard Band
WQVP573	GM	533	Kansas City	Jackson	MO	Guard Band
WQVP573	GM	541	Kansas City	Jackson	MO	Guard Band
WQVP573	GM	549	Kansas City	Jackson	MO	Guard Band
WQVX246	GB	545	Avon	Stearns	MN	Guard Band
WQVX247	YB	533	Aspen	Pitkin	CO	Guard Band
WQVX247	YB	542	Aspen	Pitkin	CO	Guard Band
WQVX257	YB	514	St. Paul	Ramsey	MN	Guard Band
WQVX257	YB	523	St. Paul	Ramsey	MN	Guard Band
Spectrum 100						
WQUX289	YX	515	Portage	Columbia	WI	Guard Band
WQUX289	YX	523	Portage	Columbia	WI	Guard Band
WQUX289	YX	531	Portage	Columbia	WI	Guard Band
WQUX289	YX	539	Portage	Columbia	WI	Guard Band
WQUX289	YX	547	Portage	Columbia	WI	Guard Band
WQUX289	YX	515	Monticello	Green	WI	Guard Band

The service classes are defined as below:

GM - 800 MHz Conventional SMR (SMR, site-specific)

GB - Business, 806-821/851-866 MHz, Conventional

YB - Business, 806-821/851-866 MHz, Trunked

YX - SMR, 806-821/851-866 MHz, Trunked

Exhibit 2: Frequencies At Issue

Call Sign	Service Class	Channel	City	County	State	Band
WQUX289	YX	523	Monticello	Green	WI	Guard Band
WQUX289	YX	531	Monticello	Green	WI	Guard Band
WQUX289	YX	539	Monticello	Green	WI	Guard Band
WQUX289	YX	547	Monticello	Green	WI	Guard Band
WQVM604	GM	515	Wichita	Sedgwick	KS	Guard Band
WQVM604	GM	523	Wichita	Sedgwick	KS	Guard Band
WQVM604	GM	531	Wichita	Sedgwick	KS	Guard Band
WQVM604	GM	539	Wichita	Sedgwick	KS	Guard Band
WQVM604	GM	547	Wichita	Sedgwick	KS	Guard Band
WQVM607	GM	515	Erlanger	Kenton	KY	Guard Band
WQVM607	GM	523	Erlanger	Kenton	KY	Guard Band
WQVM607	GM	531	Erlanger	Kenton	KY	Guard Band
WQVM607	GM	539	Erlanger	Kenton	KY	Guard Band
WQVM607	GM	547	Erlanger	Kenton	KY	Guard Band
WQVM608	GM	515	Louisville	Jefferson	KY	Guard Band
WQVM608	GM	523	Louisville	Jefferson	KY	Guard Band
WQVM608	GM	531	Louisville	Jefferson	KY	Guard Band
WQVM608	GM	539	Louisville	Jefferson	KY	Guard Band
WQVM608	GM	547	Louisville	Jefferson	KY	Guard Band
WQVM718	GM	515	Lexington	Fayette	KY	Guard Band
WQVM718	GM	523	Lexington	Fayette	KY	Guard Band
WQVM718	GM	531	Lexington	Fayette	KY	Guard Band
WQVM718	GM	539	Lexington	Fayette	KY	Guard Band
WQVM718	GM	547	Lexington	Fayette	KY	Guard Band
WQVM867	GM	515	Kansas City	Jackson	MO	Guard Band
WQVM867	GM	523	Kansas City	Jackson	MO	Guard Band
WQVM867	GM	531	Kansas City	Jackson	MO	Guard Band
WQVM867	GM	539	Kansas City	Jackson	MO	Guard Band
WQVM867	GM	547	Kansas City	Jackson	MO	Guard Band
WQVM869	GM	512	Clayton	St. Louis	MO	Guard Band
WQVM869	GM	520	Clayton	St. Louis	MO	Guard Band
WQVM869	GM	528	Clayton	St. Louis	MO	Guard Band
WQVM869	GM	536	Clayton	St. Louis	MO	Guard Band
WQVM869	GM	544	Clayton	St. Louis	MO	Guard Band
WQVQ486	GM	504	Tridelphia	Ohio County	WV	Expansion Band
WQVQ486	GM	505	Tridelphia	Ohio County	WV	Expansion Band
WQVQ486	GM	515	Tridelphia	Ohio County	WV	Guard Band
WQVQ486	GM	539	Tridelphia	Ohio County	WV	Guard Band
WQVR620	GM	472	Syracuse	Onondaga	NY	Expansion Band
WQVR620	GM	482	Syracuse	Onondaga	NY	Expansion Band
WQVR620	GM	486	Syracuse	Onondaga	NY	Expansion Band
WQVR620	GM	502	Syracuse	Onondaga	NY	Expansion Band

The service classes are defined as below:

GM - 800 MHz Conventional SMR (SMR, site-specific)

GB - Business, 806-821/851-866 MHz, Conventional

YB - Business, 806-821/851-866 MHz, Trunked

YX - SMR, 806-821/851-866 MHz, Trunked

Exhibit 2: Frequencies At Issue

Call Sign	Service Class	Channel	City	County	State	Band
WQVR620	GM	506	Syracuse	Onondaga	NY	Expansion Band
WQVR621	GM	483	Albany	Albany	NY	Expansion Band
WQVR621	GM	487	Albany	Albany	NY	Expansion Band
WQVR621	GM	503	Albany	Albany	NY	Expansion Band
WQVR621	GM	507	Albany	Albany	NY	Expansion Band
WQVR621	GM	547	Albany	Albany	NY	Guard Band
WQWI447	GM	472	Syracuse	Onondaga	NY	Expansion Band
Innovative Group						
WQTI783	GM	532	Minneapolis	Hennepin	MN	Guard Band
WQTI783	GM	540	Minneapolis	Hennepin	MN	Guard Band
WQTI783	GM	549	Minneapolis	Hennepin	MN	Guard Band
WQTI783	GM	516	Avon	Stearns	MN	Guard Band
WQTI783	GM	516	Brainerd	Crow Wing	MN	Guard Band
WQTI790	GM	516	Englewood	Arapahoe	CO	Guard Band
WQTI790	GM	529	Englewood	Arapahoe	CO	Guard Band
WQTI790	GM	535	Vale	Pitkin	CO	Guard Band
WQTI790	GM	541	Vale	Pitkin	CO	Guard Band
WQTI790	GM	547	Vale	Pitkin	CO	Guard Band
WQVN603	GM	514	Clayton	St. Louis	MO	Guard Band
WQVN603	GM	522	Clayton	St. Louis	MO	Guard Band
WQVN603	GM	530	Clayton	St. Louis	MO	Guard Band
WQVN603	GM	538	Clayton	St. Louis	MO	Guard Band
WQVN603	GM	546	Clayton	St. Louis	MO	Guard Band
Premier Group						
WQVM874	GM	513	Clayton	St. Louis	MO	Guard Band
WQVM874	GM	521	Clayton	St. Louis	MO	Guard Band
WQVM874	GM	529	Clayton	St. Louis	MO	Guard Band
WQVM874	GM	537	Clayton	St. Louis	MO	Guard Band
WQVM874	GM	545	Clayton	St. Louis	MO	Guard Band
WQVS904	GM	513	Kansas City	Jackson	MO	Guard Band
WQVS904	GM	521	Kansas City	Jackson	MO	Guard Band
WQVS904	GM	529	Kansas City	Jackson	MO	Guard Band
WQVS904	GM	537	Kansas City	Jackson	MO	Guard Band
WQVS904	GM	545	Kansas City	Jackson	MO	Guard Band
Prosperity Group						
WQTI777	GM	513	Minneapolis	Hennepin	MN	Guard Band
WQTI777	GM	522	Minneapolis	Hennepin	MN	Guard Band
WQTI777	GM	547	Minneapolis	Hennepin	MN	Guard Band
WQTI793	GM	520	Denver	Denver	CO	Guard Band

The service classes are defined as below:

GM - 800 MHz Conventional SMR (SMR, site-specific)

GB - Business, 806-821/851-866 MHz, Conventional

YB - Business, 806-821/851-866 MHz, Trunked

YX - SMR, 806-821/851-866 MHz, Trunked

Exhibit 2: Frequencies At Issue

Call Sign	Service Class	Channel	City	County	State	Band
WQTI793	GM	534	Vale	Pitkin	CO	Guard Band
WQTI793	GM	545	Vale	Pitkin	CO	Guard Band
WQVP574	GM	516	Clayton	St. Louis	MO	Guard Band
WQVP574	GM	524	Clayton	St. Louis	MO	Guard Band
WQVP574	GM	532	Clayton	St. Louis	MO	Guard Band
WQVP574	GM	540	Clayton	St. Louis	MO	Guard Band
WQVP574	GM	548	Clayton	St. Louis	MO	Guard Band
WQVQ399	GM	485	Tridelphia	Ohio	WV	Expansion Band
WQVQ399	GM	486	Tridelphia	Ohio	WV	Expansion Band
WQVQ399	GM	494	Tridelphia	Ohio	WV	Expansion Band

Source: FCC Universal Licensing System.

Note: All channels are 20 kHz.

The service classes are defined as below:

GM - 800 MHz Conventional SMR (SMR, site-specific)

GB - Business, 806-821/851-866 MHz, Conventional

YB - Business, 806-821/851-866 MHz, Trunked

YX - SMR, 806-821/851-866 MHz, Trunked

EXHIBIT 3

Exhibit 3: Frequencies At All Locations

			Call Sign	WQTI782	WQTI782	WQTI782	WQTI794	WQTI794	WQUX291
			Grant Date	2/11/2014	2/11/2014	2/11/2014	2/11/2014	2/11/2014	11/5/2014
			Status	Canceled	Canceled	Canceled	Canceled	Canceled	Active
			Site	1	2	3	1	2	1
			Latitude, Longitude	45-03-14.0 N, 093-21-29.0 W 45-43-11.5 N, 094-23-03.5 W 46-19-34.6 N, 094-16-23.1 W 39-43-39.0 N, 105-03-33.0 W 39-31-57.0 N, 107-20-32.0 W 43-29-18.0 N, 089-28-36.0 W					
			Radius	20.0 km	20.0 km	20.0 km	20.0 km	20.0 km	20.0 km
			Farthest Incumbent	56	>113	>113	>113	>113	69
Expansion Band	860.0125	471							
Expansion Band	860.0375	472	11	24	88	6	8	19	
Expansion Band	860.0625	473	30	78	98.9	6	4	19	
Expansion Band	860.0875	474	30	78	98.9	14	112.9	19	
Expansion Band	860.1125	475	30	78	98.9	29	8	19	
Expansion Band	860.1375	476	33	76	98.9	22	69	67	
Expansion Band	860.1375	476	23	24	88	6	8	19	
Expansion Band	860.1625	477	11	24	88	>113	90.7	19	
Expansion Band	860.1875	478	10	24	88	29	77	19	
Expansion Band	860.2125	479	26	24	88	14	8	19	
Expansion Band	860.2375	480	11	24	88	14	8	69	
Expansion Band	860.2625	481	11	25	77	14	8	19	
Expansion Band	860.2875	482	55	54	109.3	6	52	14	
Expansion Band	860.3125	483	11	>113	>113	13	72	14	
Expansion Band	860.3375	484	11	109.8	>113	10	>113	14	
Expansion Band	860.3625	485	30	81	>113	16	>113	14	
Expansion Band	860.3875	486	11	>113	>113	10	62	14	
Expansion Band	860.4125	487	11	>113	>113	6	>113	14	
Expansion Band	860.4375	488	11	102.2	>113	14	8	19	
Expansion Band	860.4625	489	26	>113	>113	14	8	19	
Expansion Band	860.4875	490	10	>113	>113	14	8	19	
Expansion Band	860.5125	491	24	24	88	14	85	19	
Expansion Band	860.5375	492	23	24	88	14	12	19	
Expansion Band	860.5625	493	56	54	109.2	14	55	49	
Expansion Band	860.5875	494	30	81	>113	26	>113	19	
Expansion Band	860.6125	495	10	24	88	29	>113	19	
Expansion Band	860.6375	496	34	24	88	14	8	19	
Expansion Band	860.6625	497	10	24	88	46	8	19	
Expansion Band	860.6875	498	11	24	88	29	55	19	
Expansion Band	860.7125	499	11	24	88	14	8	19	
Expansion Band	860.7375	500	28	>113	>113	14	52	19	
Expansion Band	860.7625	501	10	64	>113	19	8	19	
Expansion Band	860.7875	502	23	>113	>113	29	60	46	
Expansion Band	860.8125	503	34	>113	>113	32	>113	21	
Expansion Band	860.8375	504	10	>113	>113	15	52	16	
Expansion Band	860.8625	505	10	>113	>113	37	>113	16	
Expansion Band	860.8875	506	10	102.7	>113	32	>113	59	
Expansion Band	860.9125	507	11	>113	>113	32	>113	6	
Expansion Band	860.9375	508	11	44	26	19	8	19	
Expansion Band	860.9625	509	10	80	>113	19	8	19	
Expansion Band	860.9875	510	11	>113	>113	19	8	19	

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQTI782	WQTI782	WQTI782	WQTI794	WQTI794	WQUX291
			Grant Date	2/11/2014	2/11/2014	2/11/2014	2/11/2014	2/11/2014	11/5/2014
			Status	Canceled	Canceled	Canceled	Canceled	Canceled	Active
			Site	1	2	3	1	2	1
			Latitude, Longitude	45-03-14.0 N, 093-21-29.0 W	45-43-11.5 N, 094-23-03.5 W	46-19-34.6 N, 094-16-23.1 W	39-43-39.0 N, 105-03-33.0 W	39-31-57.0 N, 107-20-32.0 W	43-29-18.0 N, 089-28-36.0 W
			Radius	20.0 km	20.0 km	20.0 km	20.0 km	20.0 km	20.0 km
			Farthest Incumbent	56	>113	>113	>113	>113	69
Guard Band	861.0125	511		11	35	92.8	6	112.9	0
Guard Band	861.0375	512		7	78	98.9	6	57	0
Guard Band	861.0625	513		4	78	98.9	10	8	19
Guard Band	861.0875	514		Janus	>113	>113	6	8	0
Guard Band	861.1125	515		4	78	98.9	17	57	0
Guard Band	861.1375	516		11	11	4	10	57	19
Guard Band	861.1625	517		24	>113	>113	10	57	Janus
Guard Band	861.1875	518		10	78	98.9	6	112.9	0
Guard Band	861.2125	519		11	26	88	6	8	0
Guard Band	861.2375	520		7	78	98.9	6	57	0
Guard Band	861.2625	521		11	11	77	Janus	Janus	19
Guard Band	861.2875	522		4	78	98.9	6	8	0
Guard Band	861.3125	523		Janus	>113	>113	6	8	0
Guard Band	861.3375	524		4	78	98.9	6	85	19
Guard Band	861.3625	525		11	24	88	14	8	Janus
Guard Band	861.3875	526		10	78	98.9	14	8	0
Guard Band	861.4125	527		11	26	88	14	8	0
Guard Band	861.4375	528		11	24	88	17	85	0
Guard Band	861.4625	529		11	24	88	10	85	19
Guard Band	861.4875	530		11	24	88	7	62	0
Guard Band	861.5125	531		11	24	88	10	85	0
Guard Band	861.5375	532		8	>113	>113	14	>113	19
Guard Band	861.5625	533		24	>113	>113	23	57	Janus
Guard Band	861.5875	534		10	24	88	15	62	0
Guard Band	861.6125	535		10	24	88	46	62	0
Guard Band	861.6375	536		10	24	88	29	8	0
Guard Band	861.6625	537		10	26	88	29	57	19
Guard Band	861.6875	538		10	24	88	29	57	0
Guard Band	861.7125	539		4	78	98.9	29	62	0
Guard Band	861.7375	540		8	26	88	29	62	19
Guard Band	861.7625	541		24	>113	>113	29	62	Janus
Guard Band	861.7875	542		10	78	98.9	23	Janus	0
Guard Band	861.8125	543		11	35	92.8	15	57	0
Guard Band	861.8375	544		7	26	88	46	57	0
Guard Band	861.8625	545		11	Janus	Janus	46	62	19
Guard Band	861.8875	546		11	80	>113	29	8	0
Guard Band	861.9125	547		4	112.8	>113	29	62	0
Guard Band	861.9375	548		4	108.8	>113	29	62	19
Guard Band	861.9625	549		8	>113	>113	29	57	Janus
Guard Band	861.9875	550		24	>113	>113	29	57	0

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license :

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQUX291	WQVN336	WQVP573	WQVX246	WQVX247	WQVX257						
			Grant Date	11/5/2014	4/3/2015	4/8/2015	6/3/2015	6/3/2015	6/3/2015						
			Status	Active	Active	Active	Active	Active	Active						
			Site	3	1	1	1	1	1						
			Latitude, Longitude	42-43-54.9 N, 089-37-35.0 W 38-39-02.0 N, 090-20-07.0 W 39-04-31.3 N, 094-31-17.7 W 45-38-37.0 N, 094-28-22.0 W 39-13-16.0 N, 106-48-49.0 W 44-56-53.4 N, 093-05-44.3 W											
			Radius	13.0 km	10.0 km	20.0 km	20.0 km	20.0 km	20.0 km						
			Farthest Incumbent	>113	112.8	47	>113	>113	63						
Expansion Band	860.0125	471								67	1	4	24	58	14
Expansion Band	860.0375	472								67	14	7	74	55	52
Expansion Band	860.0625	473								67	29	47	74	74	51
Expansion Band	860.0875	474								67	1	7	74	58	52
Expansion Band	860.1125	475								>113	61	4	74	58	57
Expansion Band	860.1375	476								67	57	7	24	58	21
Expansion Band	860.1625	477								67	6	4	24	>113	14
Expansion Band	860.1875	478								67	60	7	24	38	16
Expansion Band	860.2125	479								67	6	8	24	58	4
Expansion Band	860.2375	480								89.8	6	7	24	58	0
Expansion Band	860.2625	481								67	91.9	7	19	58	0
Expansion Band	860.2875	482								70	6	6	54	58	51
Expansion Band	860.3125	483								70	31	7	>113	46	14
Expansion Band	860.3375	484								10	34	8	104.9	>113	14
Expansion Band	860.3625	485								51	31	30	82	>113	52
Expansion Band	860.3875	486								10	26	6	>113	8	14
Expansion Band	860.4125	487								10	31	8	>113	>113	14
Expansion Band	860.4375	488								67	6	8	92.4	58	0
Expansion Band	860.4625	489								67	8	7	>113	58	4
Expansion Band	860.4875	490								67	8	22	>113	58	16
Expansion Band	860.5125	491								67	74	4	24	58	0
Expansion Band	860.5375	492								67	75	18	24	50	12
Expansion Band	860.5625	493								37	14	7	54	2	63
Expansion Band	860.5875	494								67	6	6	82	>113	52
Expansion Band	860.6125	495								67	8	4	24	>113	16
Expansion Band	860.6375	496								67	0	8	24	58	25
Expansion Band	860.6625	497								67	0	7	24	58	16
Expansion Band	860.6875	498								67	29	7	24	58	14
Expansion Band	860.7125	499								67	8	7	24	58	14
Expansion Band	860.7375	500								67	8	8	>113	13	6
Expansion Band	860.7625	501								67	12	10	54	58	16
Expansion Band	860.7875	502								42	12	15	>113	7	12
Expansion Band	860.8125	503								54	13	6	>113	>113	25
Expansion Band	860.8375	504								67	11	8	>113	13	16
Expansion Band	860.8625	505								43	31	4	>113	>113	16
Expansion Band	860.8875	506								28	14	20	92.8	>113	16
Expansion Band	860.9125	507								7	112.8	7	>113	>113	14
Expansion Band	860.9375	508								67	11	10	54	58	0
Expansion Band	860.9625	509								67	8	7	69	58	16
Expansion Band	860.9875	510								67	8	7	>113	58	0

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQUX291	WQVN336	WQVP573	WQVX246	WQVX247	WQVX257
			Grant Date	11/5/2014	4/3/2015	4/8/2015	6/3/2015	6/3/2015	6/3/2015
			Status	Active	Active	Active	Active	Active	Active
			Site	3	1	1	1	1	1
			Latitude, Longitude	42-43-54.9 N, 089-38-39-02.0 N, 090-39-04-31.3 N, 094-45-38-37.0 N, 094-39-13-16.0 N, 106-44-56-53.4 N, 093-37-35.0 W, 20-07.0 W, 31-17.7 W, 28-22.0 W, 48-49.0 W, 05-44.3 W					
			Radius	13.0 km	10.0 km	20.0 km	20.0 km	20.0 km	20.0 km
			Farthest Incumbent	>113	112.8	47	>113	>113	63
Guard Band	861.0125	511	0	0	4	35	74	11	
Guard Band	861.0375	512	0	0	4	74	0	14	
Guard Band	861.0625	513	67	0	6	74	58	20	
Guard Band	861.0875	514	0	0	13	>113	58	Janus	
Guard Band	861.1125	515	0	0	1	74	0	24	
Guard Band	861.1375	516	67	0	4	0	0	14	
Guard Band	861.1625	517	Janus	Janus	Janus	>113	0	0	
Guard Band	861.1875	518	0	0	7	74	74	0	
Guard Band	861.2125	519	0	0	17	25	49	11	
Guard Band	861.2375	520	0	0	4	74	0	14	
Guard Band	861.2625	521	67	0	6	0	>113	14	
Guard Band	861.2875	522	0	0	13	74	58	20	
Guard Band	861.3125	523	0	0	1	>113	58	Janus	
Guard Band	861.3375	524	67	0	4	74	58	24	
Guard Band	861.3625	525	Janus	Janus	Janus	24	58	14	
Guard Band	861.3875	526	0	0	7	74	49	0	
Guard Band	861.4125	527	0	0	4	25	58	11	
Guard Band	861.4375	528	0	0	4	24	58	14	
Guard Band	861.4625	529	67	0	6	24	58	14	
Guard Band	861.4875	530	0	0	13	24	8	14	
Guard Band	861.5125	531	0	0	1	24	58	14	
Guard Band	861.5375	532	67	0	4	>113	>113	14	
Guard Band	861.5625	533	Janus	Janus	Janus	>113	Janus	0	
Guard Band	861.5875	534	0	0	7	24	8	16	
Guard Band	861.6125	535	0	0	7	24	8	16	
Guard Band	861.6375	536	0	0	4	24	48	16	
Guard Band	861.6625	537	67	0	6	25	0	16	
Guard Band	861.6875	538	0	0	13	24	0	16	
Guard Band	861.7125	539	0	0	1	74	8	24	
Guard Band	861.7375	540	67	0	4	25	8	14	
Guard Band	861.7625	541	Janus	Janus	Janus	>113	8	0	
Guard Band	861.7875	542	0	0	7	74	Janus	0	
Guard Band	861.8125	543	0	0	4	35	0	11	
Guard Band	861.8375	544	0	0	4	25	0	14	
Guard Band	861.8625	545	67	0	6	Janus	8	14	
Guard Band	861.8875	546	0	0	13	69	48	14	
Guard Band	861.9125	547	0	0	1	112.8	8	20	
Guard Band	861.9375	548	67	0	4	107.8	8	24	
Guard Band	861.9625	549	Janus	Janus	Janus	>113	0	14	
Guard Band	861.9875	550	0	0	7	>113	0	0	

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue at issue.

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQUX289	WQUX289	WQVM604	WQVM607	WQVM608	WQVM718
			Grant Date	11/5/2014	11/5/2014	3/30/2015	3/30/2015	3/30/2015	3/31/2015
			Status	Active	Active	Active	Active	Active	Active
			Site	1	3	1	1	1	1
			Latitude, Longitude	43-29-18.0 N, 089-28-36.0 W	42-43-54.9 N, 089-37-35.0 W	37-41-15.0 N, 097-20-14.0 W	38-58-54.5 N, 084-32-44.8 W	38-09-48.0 N, 085-45-14.1 W	38-03-15.3 N, 084-31-18.8 W
			Radius	20.0 km	13.0 km	20.0 km	10.0 km	10.0 km	20.0 km
			Farthest Incumbent	69	>113	>113	106.6	>113	>113
Expansion Band	860.0125	471	19	67	4	12	10	10	
Expansion Band	860.0375	472	19	67	80	86	5	2	
Expansion Band	860.0625	473	19	67	5	12	5	10	
Expansion Band	860.0875	474	19	67	9	0	56	53	
Expansion Band	860.1125	475	67	>113	5	14	10	10	
Expansion Band	860.1375	476	19	67	>113	13	0	10	
Expansion Band	860.1625	477	19	67	76	86	5	10	
Expansion Band	860.1875	478	19	67	40	12	43	10	
Expansion Band	860.2125	479	19	67	4	9	5	10	
Expansion Band	860.2375	480	69	89.8	4	0	10	10	
Expansion Band	860.2625	481	19	67	4	6	10	40	
Expansion Band	860.2875	482	14	70	8	68	47	19	
Expansion Band	860.3125	483	14	70	>113	9	24	63	
Expansion Band	860.3375	484	14	10	8	46	24	88.4	
Expansion Band	860.3625	485	14	51	8	106.6	24	92.5	
Expansion Band	860.3875	486	14	10	5	83	89.9	97.2	
Expansion Band	860.4125	487	14	10	8	9	>113	84	
Expansion Band	860.4375	488	19	67	4	0	10	10	
Expansion Band	860.4625	489	19	67	4	0	10	10	
Expansion Band	860.4875	490	19	67	4	6	23	26	
Expansion Band	860.5125	491	19	67	5	9	5	11	
Expansion Band	860.5375	492	19	67	4	9	5	10	
Expansion Band	860.5625	493	49	37	5	9	24	10	
Expansion Band	860.5875	494	19	67	4	9	10	10	
Expansion Band	860.6125	495	19	67	5	9	15	10	
Expansion Band	860.6375	496	19	67	4	77	71	10	
Expansion Band	860.6625	497	19	67	40	9	10	10	
Expansion Band	860.6875	498	19	67	4	87	24	10	
Expansion Band	860.7125	499	19	67	4	9	5	10	
Expansion Band	860.7375	500	19	67	4	9	5	57	
Expansion Band	860.7625	501	19	67	4	0	5	10	
Expansion Band	860.7875	502	46	42	5	32	5	110.7	
Expansion Band	860.8125	503	21	54	>113	46	20	88.4	
Expansion Band	860.8375	504	16	67	>113	75	>113	111.4	
Expansion Band	860.8625	505	16	43	>113	88	>113	>113	
Expansion Band	860.8875	506	59	28	>113	21	>113	108.1	
Expansion Band	860.9125	507	6	7	40	106.6	>113	>113	
Expansion Band	860.9375	508	19	67	4	6	5	10	
Expansion Band	860.9625	509	19	67	4	9	5	10	
Expansion Band	860.9875	510	19	67	4	9	5	10	

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQUX289	WQUX289	WQVM604	WQVM607	WQVM608	WQVM718
			Grant Date	11/5/2014	11/5/2014	3/30/2015	3/30/2015	3/30/2015	3/31/2015
			Status	Active	Active	Active	Active	Active	Active
			Site	1	3	1	1	1	1
			Latitude, Longitude	43-29-18.0 N, 089-28-36.0 W 42-43-54.9 N, 089-37-35.0 W 37-41-15.0 N, 097-20-14.0 W 38-58-54.5 N, 084-32-44.8 W 38-09-48.0 N, 085-45-14.1 W 38-03-15.3 N, 084-31-18.8 W					
			Radius	20.0 km	13.0 km	20.0 km	10.0 km	10.0 km	20.0 km
			Farthest Incumbent	69	>113	>113	106.6	>113	>113
Guard Band	861.0125	511		0	0	4	0	0	10
Guard Band	861.0375	512		0	0	4	0	5	10
Guard Band	861.0625	513		19	67	4	9	5	10
Guard Band	861.0875	514		0	0	0	9	5	10
Guard Band	861.1125	515		Janus	Janus	Janus	Janus	Janus	Janus
Guard Band	861.1375	516		19	67	0	0	10	10
Guard Band	861.1625	517		0	0	4	9	10	10
Guard Band	861.1875	518		0	0	4	0	10	10
Guard Band	861.2125	519		0	0	4	0	0	10
Guard Band	861.2375	520		0	0	4	0	10	10
Guard Band	861.2625	521		19	67	4	9	5	10
Guard Band	861.2875	522		0	0	0	0	5	10
Guard Band	861.3125	523		Janus	Janus	Janus	Janus	Janus	Janus
Guard Band	861.3375	524		19	67	0	9	5	10
Guard Band	861.3625	525		0	0	4	0	5	10
Guard Band	861.3875	526		0	0	4	0	5	10
Guard Band	861.4125	527		0	0	4	0	0	10
Guard Band	861.4375	528		0	0	4	0	5	10
Guard Band	861.4625	529		19	67	4	9	5	10
Guard Band	861.4875	530		0	0	0	0	5	10
Guard Band	861.5125	531		Janus	Janus	Janus	Janus	Janus	Janus
Guard Band	861.5375	532		19	67	0	0	10	10
Guard Band	861.5625	533		0	0	4	0	10	10
Guard Band	861.5875	534		0	0	4	0	10	10
Guard Band	861.6125	535		0	0	4	0	0	10
Guard Band	861.6375	536		0	0	4	0	10	10
Guard Band	861.6625	537		19	67	4	9	10	10
Guard Band	861.6875	538		0	0	0	0	10	10
Guard Band	861.7125	539		Janus	Janus	Janus	Janus	Janus	Janus
Guard Band	861.7375	540		19	67	0	0	10	10
Guard Band	861.7625	541		0	0	4	0	10	10
Guard Band	861.7875	542		0	0	4	0	10	10
Guard Band	861.8125	543		0	0	4	0	0	10
Guard Band	861.8375	544		0	0	4	0	10	10
Guard Band	861.8625	545		19	67	4	12	10	10
Guard Band	861.8875	546		0	0	0	0	10	2
Guard Band	861.9125	547		Janus	Janus	Janus	Janus	Janus	Janus
Guard Band	861.9375	548		19	67	0	0	10	2
Guard Band	861.9625	549		0	0	4	0	10	2
Guard Band	861.9875	550		0	0	4	0	10	2

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue b

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQVM867	WQVM869	WQVQ486	WQVR620	WQVR621	WQWI447
			Grant Date	4/1/2015	4/1/2015	4/15/2015	4/22/2015	4/22/2015	8/31/2015
			Status	Active	Active	Active	Terminated	Active	Active
			Site	1	1	1	1	1	1
			Latitude, Longitude	39-05-01.0 N, 094-30-58.0 W	38-39-02.0 N, 090-20-07.0 W	40-02-37.8 N, 080-36-08.0 W	43-02-44.4 N, 076-08-53.2 W	42-39-42.8 N, 073-44-51.1 W	43-02-44.4 N, 076-08-53.2 W
			Radius	20.0 km	10.0 km	6.0 km	20.0 km	20.0 km	20.0 km
			Farthest Incumbent	46	112.8	>113	>113	101.7	>113
Expansion Band	860.0125	471		5	1	>113	>113	31	>113
Expansion Band	860.0375	472		8	14	>113	Janus	31	Janus
Expansion Band	860.0625	473		46	29	>113	110.2	3	>113
Expansion Band	860.0875	474		8	1	>113	>113	22	>113
Expansion Band	860.1125	475		5	61	>113	>113	31	>113
Expansion Band	860.1375	476		8	57	>113	>113	31	>113
Expansion Band	860.1625	477		5	6	>113	>113	3	>113
Expansion Band	860.1875	478		8	60	>113	>113	31	>113
Expansion Band	860.2125	479		8	6	>113	>113	1	>113
Expansion Band	860.2375	480		8	6	>113	>113	13	>113
Expansion Band	860.2625	481		8	91.9	>113	>113	1	>113
Expansion Band	860.2875	482		7	6	>113	Janus	22	>113
Expansion Band	860.3125	483		8	31	>113	>113	Janus	>113
Expansion Band	860.3375	484		8	34	>113	>113	22	>113
Expansion Band	860.3625	485		31	31	95.7	>113	16	>113
Expansion Band	860.3875	486		7	26	>113	Janus	3	>113
Expansion Band	860.4125	487		8	31	>113	>113	Janus	>113
Expansion Band	860.4375	488		8	6	>113	>113	1	>113
Expansion Band	860.4625	489		8	8	>113	>113	31	>113
Expansion Band	860.4875	490		22	8	>113	>113	31	>113
Expansion Band	860.5125	491		5	74	>113	14	31	>113
Expansion Band	860.5375	492		19	75	>113	>113	21	>113
Expansion Band	860.5625	493		8	14	>113	>113	3	>113
Expansion Band	860.5875	494		6	6	88.4	>113	34	>113
Expansion Band	860.6125	495		5	8	>113	>113	3	>113
Expansion Band	860.6375	496		8	0	>113	>113	17	>113
Expansion Band	860.6625	497		8	0	>113	>113	28	>113
Expansion Band	860.6875	498		8	29	>113	80	3	>113
Expansion Band	860.7125	499		8	8	>113	>113	31	>113
Expansion Band	860.7375	500		8	8	>113	>113	31	>113
Expansion Band	860.7625	501		11	12	>113	>113	10	>113
Expansion Band	860.7875	502		16	12	>113	Janus	34	>113
Expansion Band	860.8125	503		7	13	>113	>113	Janus	>113
Expansion Band	860.8375	504		8	11	Janus	>113	45	>113
Expansion Band	860.8625	505		5	31	Janus	>113	17	>113
Expansion Band	860.8875	506		20	14	>113	Janus	101.7	>113
Expansion Band	860.9125	507		8	112.8	>113	75	Janus	112.6
Expansion Band	860.9375	508		11	11	>113	>113	9	>113
Expansion Band	860.9625	509		8	8	>113	>113	31	>113
Expansion Band	860.9875	510		8	8	>113	>113	20	>113

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQVM867	WQVM869	WQVQ486	WQVR620	WQVR621	WQWI447
			Grant Date	4/1/2015	4/1/2015	4/15/2015	4/22/2015	4/22/2015	8/31/2015
			Status	Active	Active	Active	Terminated	Active	Active
			Site	1	1	1	1	1	1
			Latitude, Longitude	39-05-01.0 N, 094-30-58.0 W 38-39-02.0 N, 090-20-07.0 W 40-02-37.8 N, 080-36-08.0 W 43-02-44.4 N, 076-08-53.2 W 42-39-42.8 N, 073-44-51.1 W 43-02-44.4 N, 076-08-53.2 W					
			Radius	20.0 km	10.0 km	6.0 km	20.0 km	20.0 km	20.0 km
			Farthest Incumbent	46	112.8	>113	>113	101.7	>113
Guard Band	861.0125	511	5	0	>113	14	31	>113	
Guard Band	861.0375	512	5	Janus	>113	14	31	>113	
Guard Band	861.0625	513	5	0	>113	14	31	>113	
Guard Band	861.0875	514	13	0	>113	>113	31	>113	
Guard Band	861.1125	515	Janus	0	Janus	14	31	>113	
Guard Band	861.1375	516	5	0	>113	>113	31	>113	
Guard Band	861.1625	517	1	0	>113	14	31	>113	
Guard Band	861.1875	518	8	0	>113	14	31	>113	
Guard Band	861.2125	519	18	0	>113	14	31	>113	
Guard Band	861.2375	520	5	Janus	>113	14	31	>113	
Guard Band	861.2625	521	5	0	>113	14	31	>113	
Guard Band	861.2875	522	13	0	>113	>113	31	>113	
Guard Band	861.3125	523	Janus	0	>113	14	31	>113	
Guard Band	861.3375	524	5	0	>113	>113	31	>113	
Guard Band	861.3625	525	1	0	>113	14	31	>113	
Guard Band	861.3875	526	8	0	>113	>113	31	>113	
Guard Band	861.4125	527	5	0	>113	14	31	>113	
Guard Band	861.4375	528	5	Janus	>113	14	31	>113	
Guard Band	861.4625	529	5	0	>113	14	31	>113	
Guard Band	861.4875	530	13	0	>113	14	31	>113	
Guard Band	861.5125	531	Janus	0	>113	14	31	>113	
Guard Band	861.5375	532	5	0	>113	>113	31	>113	
Guard Band	861.5625	533	1	0	>113	14	31	>113	
Guard Band	861.5875	534	8	0	>113	>113	31	>113	
Guard Band	861.6125	535	8	0	>113	>113	31	>113	
Guard Band	861.6375	536	5	Janus	>113	>113	31	>113	
Guard Band	861.6625	537	5	0	>113	>113	31	>113	
Guard Band	861.6875	538	13	0	>113	>113	31	>113	
Guard Band	861.7125	539	Janus	0	Janus	>113	31	>113	
Guard Band	861.7375	540	5	0	>113	>113	31	>113	
Guard Band	861.7625	541	1	0	>113	>113	31	>113	
Guard Band	861.7875	542	8	0	>113	>113	31	>113	
Guard Band	861.8125	543	5	0	>113	>113	31	>113	
Guard Band	861.8375	544	5	Janus	>113	>113	31	>113	
Guard Band	861.8625	545	5	0	>113	>113	31	>113	
Guard Band	861.8875	546	13	0	>113	>113	13	>113	
Guard Band	861.9125	547	Janus	0	>113	>113	Janus	>113	
Guard Band	861.9375	548	5	0	>113	>113	13	>113	
Guard Band	861.9625	549	1	0	>113	>113	13	>113	
Guard Band	861.9875	550	8	0	>113	>113	13	>113	

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue b

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQTI783	WQTI783	WQTI783	WQTI790	WQTI790	WQVN603
			Grant Date	2/11/2014	2/11/2014	2/11/2014	2/11/2014	2/11/2014	4/7/2015
			Status	Active	Active	Active	Active	Active	Active
			Site	1	2	3	1	2	1
Latitude, Longitude			45-00-28.2 N, 093-16-52.5 W 45-38-37.0 N, 094-28-22.0 W 46-20-55.0 N, 094-13-30.0 W 39-39-20.0 N, 104-59-26.9 W 39-09-12.0 N, 106-49-15.0 W 38-39-02.0 N, 090-20-07.0 W						
Radius			20.0 km	20.0 km	20.0 km	20.0 km	78.0 km	10.0 km	
Farthest Incumbent			64	>113	>113	>113	>113	>113	112.8
Expansion Band	860.0125	471	4	24	89.8	10	64	1	
Expansion Band	860.0375	472	38	74	103.4	10	60	14	
Expansion Band	860.0625	473	38	74	103.4	15	70	29	
Expansion Band	860.0875	474	38	74	103.4	39	64	1	
Expansion Band	860.1125	475	41	74	103.4	12	64	61	
Expansion Band	860.1375	476	21	24	89.8	10	64	57	
Expansion Band	860.1625	477	4	24	89.8	>113	>113	6	
Expansion Band	860.1875	478	4	24	89.8	39	31	60	
Expansion Band	860.2125	479	19	24	89.8	15	64	6	
Expansion Band	860.2375	480	3	24	89.8	15	64	6	
Expansion Band	860.2625	481	3	19	81	15	64	91.9	
Expansion Band	860.2875	482	63	54	110.7	10	65	6	
Expansion Band	860.3125	483	4	>113	>113	4	53	31	
Expansion Band	860.3375	484	4	104.9	>113	0	>113	34	
Expansion Band	860.3625	485	38	82	>113	24	>113	31	
Expansion Band	860.3875	486	4	>113	>113	0	0	26	
Expansion Band	860.4125	487	4	>113	>113	10	>113	31	
Expansion Band	860.4375	488	3	92.4	>113	15	64	6	
Expansion Band	860.4625	489	19	>113	>113	15	64	8	
Expansion Band	860.4875	490	4	>113	>113	15	64	8	
Expansion Band	860.5125	491	16	24	89.8	15	64	74	
Expansion Band	860.5375	492	15	24	89.8	15	57	75	
Expansion Band	860.5625	493	64	54	110.7	15	8	14	
Expansion Band	860.5875	494	38	82	>113	35	>113	6	
Expansion Band	860.6125	495	4	24	89.8	39	>113	8	
Expansion Band	860.6375	496	28	24	89.8	15	64	0	
Expansion Band	860.6625	497	4	24	89.8	56	64	0	
Expansion Band	860.6875	498	4	24	89.8	39	64	29	
Expansion Band	860.7125	499	4	24	89.8	15	64	8	
Expansion Band	860.7375	500	20	>113	>113	15	12	8	
Expansion Band	860.7625	501	4	54	>113	14	64	12	
Expansion Band	860.7875	502	15	>113	>113	39	1	12	
Expansion Band	860.8125	503	28	>113	>113	32	>113	13	
Expansion Band	860.8375	504	4	>113	>113	23	12	11	
Expansion Band	860.8625	505	4	>113	>113	27	>113	31	
Expansion Band	860.8875	506	4	92.8	>113	32	>113	14	
Expansion Band	860.9125	507	4	>113	>113	32	>113	112.8	
Expansion Band	860.9375	508	3	54	28	14	64	11	
Expansion Band	860.9625	509	4	69	>113	14	64	8	
Expansion Band	860.9875	510	3	>113	>113	14	64	8	

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQTI783	WQTI783	WQTI783	WQTI790	WQTI790	WQVN603
			Grant Date	2/11/2014	2/11/2014	2/11/2014	2/11/2014	2/11/2014	4/7/2015
			Status	Active	Active	Active	Active	Active	Active
			Site	1	2	3	1	2	1
			Latitude, Longitude	45-00-28.2 N, 093-16-52.5 W 45-38-37.0 N, 094-28-22.0 W 46-20-55.0 N, 094-13-30.0 W 39-39-20.0 N, 104-59-26.9 W 39-09-12.0 N, 106-49-15.0 W 38-39-02.0 N, 090-20-07.0 W					
			Radius	20.0 km	20.0 km	20.0 km	20.0 km	78.0 km	10.0 km
			Farthest Incumbent	64	>113	>113	>113	>113	112.8
Guard Band	861.0125	511	4	35	94.7	10	78	0	
Guard Band	861.0375	512	6	74	103.4	10	8	0	
Guard Band	861.0625	513	4	74	103.4	0	64	0	
Guard Band	861.0875	514	16	>113	>113	10	64	Janus	
Guard Band	861.1125	515	8	74	103.4	10	8	0	
Guard Band	861.1375	516	4	Janus	Janus	Janus	8	0	
Guard Band	861.1625	517	16	>113	>113	0	8	0	
Guard Band	861.1875	518	12	74	103.4	10	78	0	
Guard Band	861.2125	519	4	25	90.1	10	53	0	
Guard Band	861.2375	520	6	74	103.4	10	8	0	
Guard Band	861.2625	521	3	0	81	15	>113	0	
Guard Band	861.2875	522	4	74	103.4	10	64	Janus	
Guard Band	861.3125	523	16	>113	>113	10	64	0	
Guard Band	861.3375	524	8	74	103.4	10	64	0	
Guard Band	861.3625	525	4	24	89.8	15	64	0	
Guard Band	861.3875	526	12	74	103.4	15	53	0	
Guard Band	861.4125	527	4	25	90.1	15	64	0	
Guard Band	861.4375	528	4	24	89.8	10	64	0	
Guard Band	861.4625	529	4	24	89.8	Janus	64	0	
Guard Band	861.4875	530	4	24	89.8	10	0	Janus	
Guard Band	861.5125	531	4	24	89.8	0	64	0	
Guard Band	861.5375	532	Janus	>113	>113	15	>113	0	
Guard Band	861.5625	533	16	>113	>113	26	8	0	
Guard Band	861.5875	534	4	24	89.8	23	0	0	
Guard Band	861.6125	535	4	24	89.8	56	Janus	0	
Guard Band	861.6375	536	4	24	89.8	39	53	0	
Guard Band	861.6625	537	4	25	90.1	39	8	0	
Guard Band	861.6875	538	4	24	89.8	39	8	Janus	
Guard Band	861.7125	539	8	74	103.4	39	0	0	
Guard Band	861.7375	540	Janus	25	90.1	39	0	0	
Guard Band	861.7625	541	16	>113	>113	39	Janus	0	
Guard Band	861.7875	542	12	74	103.4	26	8	0	
Guard Band	861.8125	543	4	35	94.7	23	8	0	
Guard Band	861.8375	544	6	25	90.1	56	8	0	
Guard Band	861.8625	545	4	0	81	56	0	0	
Guard Band	861.8875	546	4	69	>113	39	53	Janus	
Guard Band	861.9125	547	4	112.8	>113	39	Janus	0	
Guard Band	861.9375	548	8	107.8	>113	39	0	0	
Guard Band	861.9625	549	Janus	>113	>113	39	8	0	
Guard Band	861.9875	550	16	>113	>113	39	8	0	

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent a free channel in the same radius as the license at issue.

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQVM874	WQVS904	WQTI777	WQTI793	WQTI793	WQVP574	
			Grant Date	4/1/2015	5/4/2015	2/11/2014	2/11/2014	2/11/2014	4/8/2015	
			Status	Active	Active	Active	Active	Active	Active	
			Site	1	1	1	1	2	1	
			Latitude, Longitude	38-39-02.0 N, 090-20-07.0 W	39-07-45.6 N, 094-31-12.3 W	45-02-24.6 N, 093-18-50.0 W	39-44-51.0 N, 104-59-23.0 W	39-09-12.0 N, 106-49-15.0 W	38-39-02.0 N, 090-20-07.0 W	
			Radius	10.0 km	20.0 km	20.0 km	20.0 km	78.0 km	10.0 km	
			Farthest Incumbent	112.8	43	59	>113	>113	112.8	
Expansion Band	860.0125	471								1
Expansion Band	860.0375	472								14
Expansion Band	860.0625	473								29
Expansion Band	860.0875	474								1
Expansion Band	860.1125	475								61
Expansion Band	860.1375	476								57
Expansion Band	860.1625	477								6
Expansion Band	860.1875	478								60
Expansion Band	860.2125	479								6
Expansion Band	860.2375	480								6
Expansion Band	860.2625	481								91.9
Expansion Band	860.2875	482								6
Expansion Band	860.3125	483								31
Expansion Band	860.3375	484								34
Expansion Band	860.3625	485								31
Expansion Band	860.3875	486								26
Expansion Band	860.4125	487								31
Expansion Band	860.4375	488								6
Expansion Band	860.4625	489								8
Expansion Band	860.4875	490								8
Expansion Band	860.5125	491								74
Expansion Band	860.5375	492								75
Expansion Band	860.5625	493								14
Expansion Band	860.5875	494								6
Expansion Band	860.6125	495								8
Expansion Band	860.6375	496								0
Expansion Band	860.6625	497								0
Expansion Band	860.6875	498								29
Expansion Band	860.7125	499								8
Expansion Band	860.7375	500								8
Expansion Band	860.7625	501								12
Expansion Band	860.7875	502								12
Expansion Band	860.8125	503								13
Expansion Band	860.8375	504								11
Expansion Band	860.8625	505								31
Expansion Band	860.8875	506								14
Expansion Band	860.9125	507								112.8
Expansion Band	860.9375	508								11
Expansion Band	860.9625	509								8
Expansion Band	860.9875	510								8

Source: FCC Universal Licensing System.

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Exhibit 3: Frequencies At All Locations

			Call Sign	WQVM874	WQVS904	WQTI777	WQTI793	WQTI793	WQVP574
			Grant Date	4/1/2015	5/4/2015	2/11/2014	2/11/2014	2/11/2014	4/8/2015
			Status	Active	Active	Active	Active	Active	Active
			Site	1	1	1	1	2	1
			Latitude, Longitude	38-39-02.0 N, 090-20-07.0 W 39-07-45.6 N, 094-31-12.3 W 45-02-24.6 N, 093-18-50.0 W 39-44-51.0 N, 104-59-23.0 W 39-09-12.0 N, 106-49-15.0 W 38-39-02.0 N, 090-20-07.0 W					
			Radius	10.0 km	20.0 km	20.0 km	20.0 km	78.0 km	10.0 km
			Farthest Incumbent	112.8	43	59	>113	>113	112.8
Guard Band	861.0125	511	0	10	8	0	78	0	
Guard Band	861.0375	512	0	10	4	0	8	0	
Guard Band	861.0625	513	Janus	Janus	Janus	10	64	0	
Guard Band	861.0875	514	0	10	20	0	64	0	
Guard Band	861.1125	515	0	5	6	13	8	0	
Guard Band	861.1375	516	0	10	8	10	8	Janus	
Guard Band	861.1625	517	0	6	20	10	8	0	
Guard Band	861.1875	518	0	11	11	0	78	0	
Guard Band	861.2125	519	0	21	8	0	53	0	
Guard Band	861.2375	520	0	10	4	Janus	8	0	
Guard Band	861.2625	521	Janus	Janus	7	8	>113	0	
Guard Band	861.2875	522	0	10	Janus	0	64	0	
Guard Band	861.3125	523	0	5	20	0	64	0	
Guard Band	861.3375	524	0	10	6	0	64	Janus	
Guard Band	861.3625	525	0	6	8	8	64	0	
Guard Band	861.3875	526	0	11	11	8	53	0	
Guard Band	861.4125	527	0	10	8	8	64	0	
Guard Band	861.4375	528	0	10	8	13	64	0	
Guard Band	861.4625	529	Janus	Janus	8	10	64	0	
Guard Band	861.4875	530	0	10	8	0	0	0	
Guard Band	861.5125	531	0	5	8	10	64	0	
Guard Band	861.5375	532	0	10	4	8	>113	Janus	
Guard Band	861.5625	533	0	6	20	29	8	0	
Guard Band	861.5875	534	0	11	8	21	Janus	0	
Guard Band	861.6125	535	0	10	8	48	0	0	
Guard Band	861.6375	536	0	10	8	32	53	0	
Guard Band	861.6625	537	Janus	Janus	8	32	8	0	
Guard Band	861.6875	538	0	10	8	32	8	0	
Guard Band	861.7125	539	0	5	6	32	0	0	
Guard Band	861.7375	540	0	10	4	32	0	Janus	
Guard Band	861.7625	541	0	6	20	32	0	0	
Guard Band	861.7875	542	0	11	11	29	8	0	
Guard Band	861.8125	543	0	10	8	21	8	0	
Guard Band	861.8375	544	0	10	4	48	8	0	
Guard Band	861.8625	545	Janus	Janus	8	48	Janus	0	
Guard Band	861.8875	546	0	10	8	32	53	0	
Guard Band	861.9125	547	0	5	Janus	32	0	0	
Guard Band	861.9375	548	0	10	6	32	0	Janus	
Guard Band	861.9625	549	0	6	4	32	8	0	
Guard Band	861.9875	550	0	11	20	32	8	0	

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue b

Source: FCC Universal Licensing System.

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Exhibit 3: Frequencies At All Locations

		Call Sign	WQVQ399
		Grant Date	4/14/2015
		Status	Terminated
		Site	1
		Latitude, Longitude	40-02-37.8 N, 080-36-08.0 W
		Radius	6.0 km
		Farthest Incumbent	>113
Expansion Band	860.0125	471	9
Expansion Band	860.0375	472	9
Expansion Band	860.0625	473	9
Expansion Band	860.0875	474	9
Expansion Band	860.1125	475	9
Expansion Band	860.1375	476	9
Expansion Band	860.1625	477	11
Expansion Band	860.1875	478	13
Expansion Band	860.2125	479	52
Expansion Band	860.2375	480	56
Expansion Band	860.2625	481	67
Expansion Band	860.2875	482	26
Expansion Band	860.3125	483	61
Expansion Band	860.3375	484	49
Expansion Band	860.3625	485	Janus
Expansion Band	860.3875	486	Janus
Expansion Band	860.4125	487	29
Expansion Band	860.4375	488	67
Expansion Band	860.4625	489	56
Expansion Band	860.4875	490	52
Expansion Band	860.5125	491	9
Expansion Band	860.5375	492	9
Expansion Band	860.5625	493	9
Expansion Band	860.5875	494	Janus
Expansion Band	860.6125	495	9
Expansion Band	860.6375	496	9
Expansion Band	860.6625	497	9
Expansion Band	860.6875	498	9
Expansion Band	860.7125	499	>113
Expansion Band	860.7375	500	9
Expansion Band	860.7625	501	67
Expansion Band	860.7875	502	60
Expansion Band	860.8125	503	53
Expansion Band	860.8375	504	96.7
Expansion Band	860.8625	505	>113
Expansion Band	860.8875	506	79
Expansion Band	860.9125	507	19
Expansion Band	860.9375	508	63
Expansion Band	860.9625	509	>113
Expansion Band	860.9875	510	56

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue boxes represent an occupied channel, and white boxes represent a free channel in the same radius as the license at issue.

Exhibit 3: Frequencies At All Locations

			Call Sign	WQVQ399
			Grant Date	4/14/2015
			Status	Terminated
			Site	1
			Latitude, Longitude	40-02-37.8 N, 080-36-08.0 W
			Radius	6.0 km
			Farthest Incumbent	>113
Guard Band	861.0125	511		
Guard Band	861.0375	512		
Guard Band	861.0625	513		
Guard Band	861.0875	514		
Guard Band	861.1125	515		
Guard Band	861.1375	516		
Guard Band	861.1625	517		
Guard Band	861.1875	518		
Guard Band	861.2125	519		
Guard Band	861.2375	520		
Guard Band	861.2625	521		
Guard Band	861.2875	522		
Guard Band	861.3125	523		
Guard Band	861.3375	524		
Guard Band	861.3625	525		
Guard Band	861.3875	526		
Guard Band	861.4125	527		
Guard Band	861.4375	528		
Guard Band	861.4625	529		
Guard Band	861.4875	530		
Guard Band	861.5125	531		
Guard Band	861.5375	532		
Guard Band	861.5625	533		
Guard Band	861.5875	534		
Guard Band	861.6125	535		
Guard Band	861.6375	536		
Guard Band	861.6625	537		
Guard Band	861.6875	538		
Guard Band	861.7125	539		
Guard Band	861.7375	540		
Guard Band	861.7625	541		
Guard Band	861.7875	542		
Guard Band	861.8125	543		
Guard Band	861.8375	544		
Guard Band	861.8625	545		
Guard Band	861.8875	546		
Guard Band	861.9125	547		
Guard Band	861.9375	548		
Guard Band	861.9625	549		
Guard Band	861.9875	550		

Source: FCC Universal Licensing System.

Note: Pink boxes represent a license at issue, blue b