

**Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band)	GN Docket No. 12-354
)	
Petition for Rulemaking of CTIA)	RM-11788
)	
Petition for Rulemaking of T-Mobile)	RM-11789

REPLY COMMENTS OF CTIA

CTIA respectfully submits these reply comments in response to the *Public Notice*¹ released by the Wireless Telecommunications Bureau of the Federal Communications Commission (“Commission”) seeking comment on petitions for rulemaking proposing targeted changes to the Citizens Broadband Radio Service (“CBRS”) rules governing the 3550-3700 MHz (“3.5 GHz”) band.

I. INTRODUCTION.

The record developed in response to the *Public Notice* demonstrates broad support for the Commission to launch a rulemaking proceeding proposing targeted changes to the CBRS rules. As commenters observe, CTIA’s proposal to authorize Priority Access Licenses (“PALs”) on a standard, ten-year license term with an expectation of renewal, assigned on a Partial Economic Area (“PEA”) basis, will promote investment and advance innovation across the band, including in General Authorized Access (“GAA”) spectrum.² And as evidence mounts that spectrum in the 3 GHz range is fast becoming an important band for 5G across the globe, CTIA’s proposed

¹ *Wireless Telecommunications Bureau and Office of Engineering and Technology Seek Comment on Petitions for Rulemaking Regarding the Citizens Broadband Radio Service*, Public Notice, 32 FCC Rcd 5055 (WTB 2017) (“*Public Notice*”). Unless otherwise noted, comments referenced herein were filed on or about July 24, 2017 in GN Docket No. 12-354.

² CTIA Petition for Rulemaking, GN Docket No. 12-354, at 3 (filed June 16, 2017) (“CTIA Petition”).

rule changes will further advance 5G opportunities in the 3.5 GHz “innovation band.”

Commissioner O’Rielly, whom Chairman Pai has asked to lead the review of the CBRS rules, noted just last week that this undertaking is designed to ensure that the rules “maximize innovation, investment and the efficient use of these frequencies.”³ He added, “[a]lthough many entities are willing to explore unlicensed GAA use, those interested in more extensive, next-generation builds require greater certainty that investment would not be stranded, and this is precisely why they want the protections afforded licensees.”⁴ CTIA’s proposals will foster just such PAL investment, without undermining the opportunity for GAA use.

The Commission should act swiftly to adopt a *Notice of Proposed Rulemaking* to advance these reforms, as well as to adopt interference protections against high-power weather radar systems operating in an adjacent band and to evolve the CBRS out-of-band emission (“OOBE”) limits in light of the developing opportunity for 5G in the 3.5 GHz band.

II. THE RECORD SUPPORTS CTIA’S PROPOSALS TO MODIFY THE PAL RULES TO ENHANCE 3.5 GHz BAND INVESTMENT AND INNOVATION.

A. CTIA’s Proposals Will Advance PALs Without Undermining GAA Use.

CTIA’s proposed rule modifications provide greater certainty for PALs, which have been identified as a key building block for 5G networks.⁵ Numerous commenters agree that auctioning PALs on a PEA basis for ten-year terms and with an expectancy of renewal will promote investment in PALs.⁶ CTIA’s proposals would leave undisturbed the existing CBRS

³ FCC Commissioner Michael O’Rielly, Remarks Before the CBRS Alliance, San Diego, CA (Aug. 1, 2017), <https://www.fcc.gov/document/commissioner-orielly-remarks-cbrs-alliance>.

⁴ *Id.*

⁵ CTIA Petition at 3; T-Mobile Comments at 5; United States Cellular Corporation (“US Cellular”) Comments at 1; Comments of AT&T at 1-2.

⁶ Verizon Comments at 6-7; AT&T Comments at 5-6; T-Mobile Comments at 5; Ericsson Comments at 6; US Cellular Comments at 6; 5G Americas Comments at 11; Telecommunications Industry Association (“TIA”) Comments at 2; Qualcomm Comments at 6-7.

framework (*i.e.*, 70 megahertz for PALs and 80 megahertz for GAA), maintaining the same level of access to GAA spectrum as exists today.

Claims that CTIA’s proposed changes would somehow upend significant GAA investment made in reliance on the current rules are unfounded.⁷ The targeted rule changes proposed by CTIA are designed only to increase the incentives for investment in PAL licenses while in no way affecting GAA users’ access to the CBRS band.⁸ The CTIA proposals do no harm to investors in GAA business models, who will enjoy the same opportunity for access to the 3.5 GHz band as they do under the current rules.

Further, the rule changes proposed by CTIA would not change the flexible nature of CBRS, contrary to the claims of some commenters that any such changes will dictate that 3.5 GHz becomes a “5G-only” band.⁹ The CBRS would continue to welcome any technology that meets the band’s technical requirements.

Instead, as commenters note, CTIA’s proposed rule changes would actually improve the 3.5 GHz ecosystem for all users, including GAA, by promoting overall greater investment and innovation in the band.¹⁰ As Verizon states, “investment will accrue to the benefit of PAL and GAA users alike.”¹¹

B. Licensing PALs on a PEA Basis Will Promote Greater Investment in the 3.5 GHz Band.

Many commenters recognize that the Commission’s current approach to licensing PALs on a census tract basis will result in as many as 518,000 PALs, creating a complicated auction,

⁷ See, e.g., Google Comments at 31; Dynamic Spectrum Alliance Comments at 6.

⁸ See AT&T Comments at 2.

⁹ See, e.g., Wireless Internet Service Providers Association (“WISPA”) Comments at 12, 14-15.

¹⁰ AT&T Comments at 3; Verizon Comments at 9-10.

¹¹ Verizon Comments at 10; *see also* AT&T Comments at 3; T-Mobile Comments at 4.

unwieldy administration of licenses, and unnecessary challenges for Spectrum Access System (“SAS”) Administrators and the licensees themselves.¹² As commenters confirm, licensing PALs using PEAs instead of census tracts will simplify licensing, allow flexible and targeted networks, and reduce border areas and accompanying risks for interference.¹³

Google erroneously suggests that the CTIA proposals would encourage warehousing – presumably to the detriment of GAA use – in the absence of a build-out requirement.¹⁴ To the contrary, the CBRS rules’ “use-it-or-share-it” opportunities that enable GAA users to access PAL spectrum when the PAL spectrum is not in use already address any potential warehousing concerns, and CTIA’s proposals in no way undermine that policy. As the Commission determined in 2015, and reaffirmed in 2016, “allowing GAA users to access bandwidth that is not actually in use by Priority Access Licensees [will] ensure that the band will be in consistent and productive use.”¹⁵ As the Commission concluded then, the “use-it-or-share-it” approach accommodates the goal of preventing “stockpiling or warehousing of spectrum.”¹⁶ Thus, until a PAL licensee registers actual use with a SAS, unused spectrum will be available for GAA use, making warehousing claims and calls for build-out requirements irrelevant.

Enlarging license areas from census tracts only to counties, as some commenters

¹² See, e.g., CTIA Petition at 9; Verizon Comments at 7; AT&T Comments at 7; US Cellular Comments at 3.

¹³ CTIA Petition at 9; AT&T Comments at 7; Verizon Comments at 7-9; T-Mobile Comments at 4-5; 5G Americas Comments at 13; Ericsson Comments at 6-7; TIA Comments at 3; Qualcomm Comments at 5-6.

¹⁴ See Google Comments at 22 (“[W]hile urging these very large license areas, CTIA and T-Mobile conspicuously do not recommend a build-out requirement ... underscor[ing] the risk that PAL holders would warehouse their rights to the protected spectrum.”).

¹⁵ *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Order on Reconsideration and Second Report and Order, 31 FCC Rcd 5011, 5060 ¶ 176 (2016) (“3.5 GHz Second Report and Order”); see also *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959, 3983 ¶ 72 (2015).

¹⁶ *3.5 GHz Second Report and Order* at 5061 ¶ 177 (quoting 47 U.S.C. § 309(j)(4)(B)) (internal quotations omitted).

suggest,¹⁷ would continue many of the challenges associated with the current licensing scheme. As with census tract-based licensing, county-based licensing would result in an unnecessarily complicated auction process, as well as increased administrative costs for the Commission and licensees. Moreover, as parties have noted in other proceedings, a county-by-county licensing scheme is sufficiently splintered to inhibit many innovative services and applications whose operations may span several counties and require larger geographic areas, such as the Internet of Things, smart grids, telemedicine, smart cities, and connected cars and trucks.¹⁸ County-based licensing also threatens to “stifle secondary markets by complicating transactions that would otherwise increase efficiency and support the public good.”¹⁹ The Commission should instead propose to revise the rules to license PALs on a PEA basis.

C. Extending PAL License Terms to Ten Years and Adding a Renewal Expectancy Will Promote Greater Investment in the 3.5 GHz Band.

CTIA’s proposals to extend the PAL term from three years to a standard ten-year license term with an expectation of renewal enjoy widespread support in the record.²⁰ Commenters note that a three-year license term fails to recognize the resources, time, and investments required for a successful network buildout. The shorter license term likewise does not account for the challenges associated with standards development, equipment certification and production, and network deployment, all of which can take multiple years. While the Wireless Innovation Forum (“WInnForum”) and the CBRS Alliance are successfully working through technical issues, this

¹⁷ See, e.g., Charter Communications, Inc. (“Charter”) Comments at 3; NCTA-The Internet & Television Association (“NCTA”) Comments at 8-10.

¹⁸ See Comments of AT&T, GN Docket No. 14-177, at 13 (Sept. 30, 2016); see also Comments of 5G Americas (formerly known as 4G Americas), GN Docket No. 14-177, at 6-7 (Jan. 27, 2016).

¹⁹ Comments of Verizon, GN Docket No. 14-177, at 10-11 (Jan. 28, 2016).

²⁰ Verizon Comments at 6-7; AT&T Comments at 5-6; T-Mobile Comments at 5; Ericsson Comments at 6; US Cellular Comments at 6; 5G Americas Comments at 11; TIA Comments at 2; Qualcomm Comments at 6-7.

work takes time; similarly, SAS administration represents a novel scheme that will require significant resources. Three-year license terms are too limited.

A ten-year license term sets the right period to incent investment in PALs. Commenters observe that providers are much more likely to make investments in an untried band if they are afforded a reasonable expectation that, should they comply with the Commission's service rules, they have a chance to earn a sufficient return on those investments. Moreover, a requirement that PAL licensees participate in auctions every few years to retain access to their licensed spectrum is unduly burdensome both on the Commission and on providers.²¹

Google is mistaken in asserting that the current lack of a renewal expectancy will not strand investment in the band because existing PAL licensees will have a cost advantage over GAA at re-auction.²² First, this argument ignores the basic fact that PAL licensees will invest less in the 3.5 GHz band to begin with, if they are given no basis to expect that they will have long-term access to the spectrum. As Commissioner O'Rielly has observed, there will be "a lack of interest in spectrum licenses upfront if there is no predictability and certainty regarding investments made by those seeking the licenses."²³ Moreover, to the extent GAA users have built out in a market, there is no basis to assume a PAL cost advantage.

Contrary to suggestions from Google, re-auctioning PALs at the end of each license term would not advance economic efficiency.²⁴ Instead, it would impede long-term investment in the band.²⁵ The "economic efficiency" Google champions is already achieved in the licensed

²¹ See, e.g., Qualcomm Comments at 7.

²² Google Comments at 19.

²³ *3.5 GHz Second Report and Order*, Partially Dissenting Statement of Commissioner Michael O'Rielly.

²⁴ Google Comments at 19-20.

²⁵ See, e.g., AT&T Comments at 6.

spectrum market through secondary market transactions. If the spectrum is not “sufficiently valuable” to a licensee, and no longer justifies a licensee’s investment, existing Commission policies enable a party with greater interest to acquire the license or lease the spectrum.²⁶

Finally, Google argues that the Commission could hold off on adopting a renewal policy and revisit this issue at the end of the initial deployment period.²⁷ This approach should not be taken, as doing so would inherently undermine the basic rationale of a right of renewal – to provide certainty that investments made during that license term will lead to a further license term. The United States cannot afford a “no renewal” policy in the global race to 5G.

III. THE RECORD SUPPORTS UPDATING THE DEVICE REGISTRATION PROCESS TO PROTECT SENSITIVE INFORMATION.

The record shows that making Citizens Broadband Radio Service Device (“CBSD”) registration information publicly available risks potentially severe competitive, consumer, national security, and cybersecurity-related harms.²⁸ Moreover, the Commission has offered no persuasive reason to make this information publicly available,²⁹ and even those supporting the current rule give no specific reasons why CBSD registration information must be made public.³⁰ As a result, the Commission should delete Section 96.55(a)(3) of its rules.

Contrary to claims by some commenters, making CBSD registration information public is not necessary to “enable three-tier sharing”³¹ or to allow both GAA and PAL users to plan

²⁶ *Id.* at 6.

²⁷ Google Comments at 18.

²⁸ AT&T Comments at 11-12; Ericsson Comments at 8; Verizon Comments at 9; 5G Americas Comments at 13.

²⁹ *See, e.g.*, AT&T Comments at 12; Ericsson Comments at 8.

³⁰ *See, e.g.*, WISPA Comments at 31 (arguing that the data should be public because “GAA users can make use of the public data to plan their deployments”).

³¹ Charter Comments at 4; NCTA Comments at 17.

deployment of spectrum with a SAS database.³² SAS Administrators will be coordinating with each other and, as CTIA previously noted, members of the public using the 3.5 GHz band on a GAA basis will coordinate with a SAS to determine where they can deploy CBSDs.³³

Finally, Google is incorrect in asserting that CTIA's approval of a model sharing agreement amounts to approval of public availability of information about CBRS deployments.³⁴ That agreement addressed the sharing of information among SAS Administrators, not the disclosure of information to the public.³⁵

IV. INTERFERENCE PROTECTION RULES FOR HIGH-POWER COMMERCIAL WEATHER RADARS OPERATING IN THE ADJACENT BAND WILL CREATE CERTAINTY FOR CBRS INTERESTS AND RADARS ALIKE.

The WinnForum suggests that the Commission propose interference rules that will protect all CBRS stakeholders, including PAL and GAA users, from commercial weather radars licensed in the adjacent 3500-3550 MHz band.³⁶ CTIA supports this proposal. High-power radar systems are today authorized on a secondary basis. Nevertheless, their presence in the adjacent band creates challenges for CBRS operations by fostering uncertainty with regard to potential interference in the band. As WinnForum notes, out-of-band emissions ("OOBE") from these systems are high enough to cause base station shut down or damage. Moreover, they may impact operation of CBRS stations that rely on the Environmental Sensor Capability ("ESC") detection networks to mitigate interference into Department of Defense radars by causing false

³² NCTA Comments at 17; Google Comments at 29; Open Technology Institute at New America and Public Knowledge Comments at 31-32.

³³ CTIA Petition at 11; *see also* Ericsson Comments at 8-9.

³⁴ Google Comments at 29.

³⁵ *See* Letter from Brian M. Josef, Assistant Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, at 1, GN Docket No. 15-319 (filed Sept. 29, 2016).

³⁶ *See generally* Wireless Innovation Forum Comments.

positive detections by ESCs.³⁷

CTIA therefore agrees with the WinnForum that the Commission should create certainty for both CBRS operations and commercial weather radars by adopting a rule that: (1) requires weather radars to include filters to protect against interference; (2) requires weather radars to be licensed below 3540 MHz to provide a guard band; (3) modifies Section 90.175 of the Commission's rules to require frequency coordination with ESC operators within 150 km of proposed radiolocation stations operating in the 3500-3550 MHz band; and (4) establishes a neutral frequency coordination body to conduct coordination.³⁸ With regard to licensing weather radars below 3540 MHz, the Commission should affirm that such operations would be on a secondary, non-interfering basis, consistent with the current allocation of weather radars in the 3500-3550 MHz band. The Commission should incorporate these proposals into the rulemaking.

V. REVISIONS TO OOBE LIMITS WILL FOSTER WIDER CHANNELIZATION AND A GREATER DIVERSITY OF INNOVATIVE 3.5 GHz DEVICES.

The record supports re-opening the emission limits and reconsidering the levels that would best promote the development of new 5G technologies in the 3.5 GHz band.³⁹ Some 5G solutions will benefit from wider channelization, which will in turn benefit from more relaxed OOBE limits. As 5G Americas explains, the current OOBE limits would require both 4G LTE and 5G operating channels using more than one PAL to back-off in power, diminishing signal coverage and lowering the quality of service.⁴⁰ Now is the time to adjust the framework the Commission adopted earlier and amend the rules to ensure that new and innovative 5G

³⁷ *Id.* at 3-4.

³⁸ *Id.* at 6.

³⁹ *See, e.g.*, 5G Americas Comments at 4, 13-14; Ericsson Comments at 9; NCTA Comments at 15-16; TIA Comments at 4; T-Mobile Comments at 2-3; WISPA Comments at 33.

⁴⁰ 5G Americas Comments at 13-14.

equipment and technologies will not be precluded by outdated regulatory restrictions.

Motorola Solutions asserts that “wider bandwidth systems are already allowed to transmit with higher power levels under the current rules.”⁴¹ But the fact is, wider bandwidth devices would be much less expensive and easier to produce under relaxed OOB limits, thereby leading to greater 3.5 GHz device innovation and investment.

VI. CONCLUSION.

To maximize the 3.5 GHz band’s potential for investment and innovation and for new 5G wireless services, the Commission should promptly initiate a rulemaking proposing to (1) revise the 3.5 GHz band PAL framework consistent with CTIA’s Petition and the comments above; (2) eliminate the requirement for public disclosure of CBSD registration information; (3) protect 3.5 GHz operations from interference from adjacent high-power weather radar operations; and (4) reexamine the OOB limits for this band.

Respectfully submitted,

/s/ Kara Romagnino Graves

Kara Romagnino Graves
Director, Regulatory Affairs

Thomas C. Power
Senior Vice President, General Counsel

Scott K. Bergmann
Vice President, Regulatory Affairs

CTIA
1400 Sixteenth Street, NW, Suite 600
Washington, DC 20036
(202) 736-3200

Dated: August 8, 2017

⁴¹ Motorola Solutions, Inc. Comments at 6.

CERTIFICATE OF SERVICE

I, Theresa Rollins, hereby certify under penalty of perjury that the foregoing Reply Comments of CTIA was served this 8th day of August, 2017, by depositing a true copy thereof with the United States Postal Service, first class postage pre-paid, addressed to:

Chris Pearson
5G Americas
1750 112th Avenue NE
Suite B220
Bellevue, WA 98004

Mitchell Koep
A Better Wireless, NISP, LLC
25215 480 Ave.
Henning, MN 56551

Administrative Computer Consultants Co.
305 E. Sale St.
Tuscola, IL 61953

Mike Whelan
AirLink Internet Services
3544 Adams Rd.
Mounds, OK 74047

Tim M. Lukasik
AlignTec Incorporated
171 Suttle Street
Suite C
Durango, CO 81303

Greg Coffey
Alluretech
1546 E Burlington Ave.
Casper, WY 82601

Alan Luelf
Alsat Wireless
145 Highway B
Montgomery City, MO 63361

Mical J Terry
American Wireless, Inc.
845 Red Hills Parkway
St. George, UT 84770

Mark Radabaugh
Amplex Electric, Inc.
22690 Pemberville Rd.
Luckey, OH 43443

Neal S. Lachman
Gregory Nemitz
Angie Communications USA
Ambachtsweg 5 3953BZ
Maarsbergen, The Netherlands

Duane Scott Pope
Arbuckle Communications, LLC
601 A St., SE
Ardmore, OK 73401

Jessica B. Lyons, Michael P. Goggin,
Gary L. Phillips & David L. Lawson
AT&T Services, Inc.
1120 20th Street, NW
Washington, DC 20036

Patrick Leary
Baicells Technologies North America, Inc.
555 Republic Drive
Plano, TX 75074

Richard Bernhardt
Bernhardt Communications Company
1142 Kentwood Avenue
Cupertino, CA 95014-5808

Efren D. Medina Jr.
Boingo Wireless, Inc.
10960 Wilshire Blvd., 23rd Floor
Los Angeles, CA. 90024

Robert W. Clark
Bolt Internet
600 E Gurley St., Suite E
Prescott, AZ 86301

Anthony Will
Broadband Corp.
585 Hwy 7 West
Hutchinson, MN 55350

Michael Meluskey
Broadband VI
2163 Hospital St.
Christiansted, VI 00820

Kenneth E. Garnett
Cal.net, Inc.
4101 Wild Chaparral Drive
Shingle Springs, CA 95682

Cardinal Wireless
Tech Guy, Inc.
101 Springfield Ave., Suite 2
Anna, IL 62906

Leigh M. Chinitz, Ph.D.
Wireless Strategy, Office of the CTO
Casa Systems
100 Old River Road
Andover, MA 01810

Jesse DuPont
Celerity Broadband LLC
P.O. Box 308
Pierre, SD 57501

Jesse DuPont
Celerity Networks LLC
P.O. Box 547
Spearfish, SD 57783

Howard Symons
Jenner & Block LLP
1099 New York Avenue, NW, Suite 900
Washington, DC 20001
Counsel for Charter Communications, Inc.

Miguel A. Gamino, Jr.
Chief Technology Officer
City of New York
255 Greenwich, 9th Floor
New York, NY 10007

Robert Greene
Columbia Energy LLC
2929 Melrose St.
Walla Walla, WA 99362

David Funderburk
5 Weldon St.
Greenville, SC 29609

Kalpak Gude
Dynamic Spectrum Alliance
3855 SW 153rd Drive
Beaverton, OR 97003

Al Rachide
Eastern Carolina Broadband, LLC
100 S Central Avenue, Suite B
Pink Hill, NC 28572

Stephen Gertson
EBTX Wireless, LLC
16203 Senkel Rd.
East Bernard, TX 77435

Elizabeth R. Sachs
Lukas, LaFuria, Gutierrez & Sachs, LLP
8300 Greensboro Dr., Suite 1200
McLean, VA 22102
Counsel to Enterprise Wireless Alliance

Mark Racek
Jared M. Carlson
ERICSSON
1776 I Street, NW, Suite 240
Washington, DC 20006

Joseph Falaschi
General Manager
e-vergent.com, LLC
8330 Corporate Drive
Mount Pleasant, WI 53406

Ken Hohhof
Express Dial Internet Inc. dba KWISP
Internet
478 Pennsylvania Ave., Suite 203
Glen Ellyn, IL 60137

Kurt Schaubach
Federated Wireless, Inc.
4301 North Fairfax Drive, Suite 310
Arlington, VA 22203

Kristian Hoffmann
Fire2Wire
P.O. Box 100
Hughson, CA 95326

Eric Hager
Forethought.net
2347 Curtis Street
Denver, CO 80205

Roland Houin
Fourway Computer Products, Inc.
51061 S.R. 933 North
South Bend, IN 46563

Michael Clemons
GigaBeam Networks LLC
P.O. Box 135
387 Old Virginia Avenue
Rich Creek, VA 24147

David Funderburk
President
GlobalVision
5 Weldon Street
Greenville, SC 29609

Jay Domingue
Gonthier, Inc dba REACH4
Communications
927 N Parkerson Ave
PO Box 691
Crowley, LA 70527

Paul Margie, S. Roberts Carter & Paul Caritj
Harris, Wiltshire & Grannis LLP
1919 M Street NW, 8th Floor
Washington, DC 20036
*Counsel for Google Inc. and Alphabet
Access*

Jeff Grazi
Grazi Communications, LLC
6445 East Ohio Avenue, Suite 100
Denver, CO 80224

Jason Guzzo
Hudson Valley Wireless
34 Russell Road
Albany, NY 12205

Josh Luthman
Imagine Networks
1100 Wayne Street
Suite 1337
Troy, OH 45373

In The Stix Broadband, LLC
712 2nd St.
Cresson, PA 16630

David Tews
Bennet & Bennet, PLLC
6124 MacArthur Boulevard
Bethesda, MD 20816
Counsel for Indigo Wireless, Inc.

Mike Hammett
Intelligent Computing Solutions
16256 Crego Rd.
DeKalb, IL 60115

Chris Cooper
Intelliwave Broadband
145 Columbus Rd.
Athens, OH 45701

Tyson Burris
Internet Communications Inc.
739 Commerce Dr.
Franklin, IN 46131

Jeff Kohler
JAB Wireless, Inc. dba Rise Broadband
61 Inverness Drive East, Suite 250
Englewood, CO 80112

Brian Gray
Joink, LLC
1362 Wabash Ave.
Terre Haute, IN 47807

Daniel Rudnick
Kcindur Communications, Inc., dba
Advanced Wireless
708 West Betteravia Road, Suite B
Santa Maria, CA 93455

Todd Bergstrom
KGT, LLC DBA Western Wimax
515 E. Carefree Hwy, Suite 334
Phoenix, AZ 85260

Andrey Patsev
Leidos, Inc.
10140 Campus Point Dr.
San Diego, CA 92121

Steve Mason
Lighthouse.Net
2972 West 8th Street, Suite A
Sault Ste. Marie, MI 49783

Kathy Tate
McMinnville Access Company
1305 NE Lafayette Ave.
McMinnville, OR 97128

Aaron Hausken
Medianet wifi
7085 Highland Dr.
Morris, IL 60450

Todd Harpest
MetaLINK Technologies, Inc.
417 Wayne Avenue
Defiance, OH 43512

Kurt Albershardt
Mimbres Communications, LLC
P.O. Box 1408
Silver City, NM 88062

Rick Chessen
Danielle J. Piñeres
NCTA - The Internet & Television Ass'n
25 Massachusetts Avenue, N.W., Suite 100
Washington, DC 20001

Steven L Barnes
New Lisbon Broadband and
Communications
6369 East Dublin Pike
New Lisbon, IN 47366

Chase Cox
Northwest Communications
844 Wood Street
Havelock, IA 50546

Rick E. Petersen
PEAK Internet, LLC
1600 SW Western Blvd., Suite 180
Corvallis, OR 97333

Phillip D. Maag
MetaLINK Technologies
417 Wayne Avenue, Suite 101
Defiance, OH 43512

Joseph Monroe
Plains Internet, LLC
7519 Canyon Drive
Amarillo, TX 79106

David L. Hulsebus
Portative Technologies, LLC
1995 Allison Lane, Suite 100
Corydon, IN 47112

Drew Beverage
ProValue.Net
801 S. Main St., Suite 1
Stillwater, OK 74074

John W. Kuzin, Dean R. Brenner
QUALCOMM Incorporated
1730 Pennsylvania Avenue, NW
Suite 850
Washington, DC 20006

Kevin W. Brown
Quantum Telecommunications, Inc.
2975B Manchester Rd.
Manchester, MD 21102

Denise Hamilton
Rapid Systems, Inc.
1211 N Westshore Blvd., Suite 711
Tampa, FL 33607

Jerry Bickle
RF DESIGN SERVICES, LLC
4800 NW 161st Street
Edmond, OK 73013

Mike Lyon
Ridge Wireless Inc.
P.O. Box 2432
Cupertino, CA 95015

David Wright
Ruckus
350 West Java Dr.
Sunnyvale, CA 94089

Alex Phillips
Rural Broadband Network Service LLC
dba HighSpeedLink.net
1528 Country Club Rd
Harrisonburg, VA 22802

Tommy Allmand
Rural Texas Broadband
112 County Road 3000
Pearsall, TX 78061

Patrick Parks
SmartBurst LLC
P.O. Box 677
Aubrey TX 76227

David D. Rines
Lerman Senter PLLC
2001 L Street, NW
Suite 400
Washington, DC 20036
Counsel for Southern Linc

Dileep Srihari
Telecommunications Industry Association
1320 N Courthouse Road
Suite 200
Arlington, VA 22201

Steve B. Sharkey
T-Mobile USA, Inc.
601 Pennsylvania Avenue, N.W.
Suite 800
Washington, DC 20004

Tamara L. Preiss
Patrick T. Welsh
VERIZON
1300 I Street, NW, Suite 500 East
Washington, DC 20005

Tim Bransford
Danielle Burt
Morgan, Lewis & Bockius LLP
1111 Pennsylvania Ave., N.W.
Washington, DC 20004-2541
Counsel for Vivint Wireless, Inc.

Stephen E. Coran
Lerman Senter PLLC
2001 L Street, NW, Suite 400
Washington, DC 20036
Counsel for WISPA

Caressa Bennet
Rural Wireless Association, Inc.
5185 MacArthur Boulevard, NW
Suite 729
Washington, DC 20016

Kevin M. Triplett
Softcom Internet Communications, Inc.
545 Industrial Drive, Suite 195
Galt, CA 95632

SPITwSPOTS, LLC
398 E. Pioneer Avenue
Suite B
Homer, AK 99603

Eric Sooter
The Junction Internet LLC
120 S Wilson Suite C
Vinita OK 74301

Shane T. Miller
TREPIC Networks
PO Box 9350
Chandler Heights, AZ 85127

Robert Sullivan
Virginia Broadband LLC
14115 Lovers Lane
Suite 135
Culpeper, VA 22701

Michael Boley
Wabash Communications, Inc
6670 Wabash Road
Celina, OH 45822

Bruce Jones
Workable Programs and Systems, Inc
dba WPS, Inc.
3100 East Arlington
Ada, OK 74820

Jill Canfield
NCTA – The Rural Broadband Ass'n
4121 Wilson Boulevard
Suite 1000
Arlington, VA 22203

James Morgan
Sony Electronics Inc.
16535 Via Esprillo
San Diego, CA 92127

Brian Matthews
Splash Wireless Internet, LLC
P.O. Box 354
Richland, MO 65556

Lee Pucker
The Wireless Innovation Forum
11300 Sunrise Valley Drive
Suite 350
Reston, VA 20191

Nick Bright
Valnet Holdings, LLC
200 ARCO PL
Box 130
Independence, KS 67301

James G. Carr
Virginia Everywhere, LLC
dba All Points Broadband
908 Trailview Boulevard SE
Suite 170
Leesburg, VA 20175

Wireless etc
P.O. Box 2600
Hot Springs, AR 71913

Charles T. Hogg, Jr.
Shelby Broadband
148 Citizens Blvd
Simpsonville, KY 40067

/s/ Theresa Rollins

Theresa Rollins