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November 13, 2017

## Via ECFS

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

Re: *Notice of Ex Parte Presentation*  
GN Docket No. 14-177

Dear Ms. Dortch:

On November 8, 2017, LeRoy T. Carlson, Jr., Chairman, United States Cellular Corporation (“U.S. Cellular”), Joseph Hanley, Senior Vice President, Telephone and Data Systems, Inc. (the parent company of U.S. Cellular), Grant Spellmeyer, Vice President, Federal Affairs and Public Policy, U.S. Cellular, and the undersigned met with Chairman Ajit Pai and Rachael Bender, Wireless and International Advisor to Chairman Pai, to discuss issues related to the above-referenced proceeding.

Specifically, U.S. Cellular discussed how its experiments with fixed 4G wireless service have produced strong results. U.S. Cellular also emphasized that its future ability to continue to compete with the dominant nationwide carriers will depend in large part on its deployment of 5G networks, which will require access to millimeter wave (“mmW”) band spectrum. In addition, U.S. Cellular explained that services operating on spectrum below 30 GHz are far more efficient than those using higher-band spectrum due to the superior propagation characteristics of below-30 GHz spectrum, which is particularly important for service providers like U.S. Cellular that focus their deployment efforts in rural and other less densely populated areas. As a result, acquiring mmW band spectrum below 30 GHz will be critical to providers such as U.S. Cellular.

In this respect, U.S. Cellular noted that only two mmW bands below 30 GHz, the 24 GHz band (24.25-24.45 GHz and 24.75-25.25 GHz) and the 28 GHz band (27.5-28.35 GHz), will be made available for flexible use licensing in the relatively near future. U.S. Cellular then explained that smaller bidders likely will not have a reasonable opportunity to acquire 28 GHz band licenses given that this band consists of only two blocks and the fact that, in many markets, only one of these blocks will be made available via auction as a result of the Commission granting mobile operating rights to existing Local Multipoint Distribution Service licensees in the 28 GHz band. Moreover, even where 28 GHz band flexible use licenses are made available, the large size of these blocks – 425 megahertz each – will cause the price of such licenses to exceed the financial means of most smaller bidders. As a result, the 24 GHz band likely will provide the only realistic option for smaller bidders to acquire rights to the below-30 GHz spectrum they will need to deploy 5G networks in rural and other underserved areas.

U.S. Cellular therefore urged the Commission to ensure that smaller bidders have a reasonable opportunity to acquire licenses for the 24 GHz band. In particular, U.S. Cellular urged the Commission to license the 24 GHz band using seven blocks of 100 megahertz each. U.S. Cellular explained that a focus on licensing the 24 GHz band using larger, 200 megahertz blocks would mean that only a single 100 megahertz block will be made available in this band. U.S. Cellular further explained that, because licenses for 200 megahertz blocks could be prohibitively expensive for many smaller bidders, all such bidders could be forced to compete for a single 24 GHz band license in each market, which undoubtedly would cause this license to sell at a premium compared to the 200 megahertz blocks. Licensing the 24 GHz band primarily on the basis of 200 megahertz blocks also would mean artificially restricting this band to, at most, four licensees, likely to the exclusion of smaller bidders.

U.S. Cellular further noted that its testing has indicated that a fixed 5G wireless service operating on a single 100 megahertz block should be able to provide competitive broadband speeds. Despite these speeds, U.S. Cellular acknowledged that some providers may desire additional 24 GHz band spectrum, but explained that these bidders would have the opportunity to acquire greater bandwidth by aggregating multiple 100 megahertz blocks. U.S. Cellular then suggested that the Commission could make 24 GHz band licenses available via a clock auction and subsequent assignment phase, similar to the approach recently used by the Commission for the 600 MHz band. As evidenced by the Incentive Auction, the use of an assignment phase would greatly facilitate the assignment of only contiguous blocks to the winners of multiple 24 GHz band licenses. At the same time, because every bidder, including smaller bidders, would be competing for all seven of the generic 100 megahertz blocks offered during the clock phase of the auction, the per-MHz price of these licensees likely would exceed the per-MHz price of 200 megahertz blocks, for which all but the largest bidders would lack the means to acquire.

During the meeting, we distributed the attached chart, which demonstrates the increased flexibility that would arise with U.S. Cellular's proposed approach for the 24 GHz band. As shown in this attachment, a band plan consisting of seven 100 MHz blocks would allow three bidders to acquire the exact same bandwidth and frequency assignments that these bidders could acquire with a band plan consisting of three 200 MHz blocks and one 100 MHz block. At the same time, a band plan with seven 100 MHz blocks would be superior because it could accommodate a greater number and variety of licensees. For example, as shown in the attachment, a band plan with seven 100 MHz blocks could accommodate five different licensees, with two of these licensees holding two contiguous blocks, for a total of 200 MHz of bandwidth each. Alternatively, this band plan would allow for seven different licensees, each with 100 MHz of spectrum, which, as noted, should be sufficient for the provision of robust 5G service.

U.S. Cellular also urged the Commission to adopt an operability rule requiring that all mobile and transportable stations that operate on any portion of the 24 GHz band be capable of operating on all frequencies within that band. As U.S. Cellular explained, because the lower segment of the 24 GHz band (*i.e.*, 24.25-24.45 GHz) is separated from the larger, upper segment of this band (*i.e.*, 24.75-25.25 GHz) by 30 megahertz of spectrum, absent an operability requirement, a boutique band class could be developed post-auction for only the upper band segment. As a result, an adequate device ecosystem may never develop for the lower band segment. At a minimum, equipment for that spectrum would be delayed and more costly. On the other hand, with an

operability requirement spanning both segments of the 24 GHz band, bidders would view all of the licenses for this band as being fungible, which would lead to greater auction participation, and thus, increased competition and higher revenues. Ensuring that the 24 GHz band licenses are fungible by adopting a band-wide operability requirement also would facilitate the use of U.S. Cellular's proposed clock auction and assignment phase competitive bidding format.

Finally, U.S. Cellular urged the Commission to apply a pre-auction mobile spectrum holdings limit to any additional mmW bands that the Commission decides to license on a geographic-area basis. U.S. Cellular noted that one option would be to include any new bands in the existing rule limiting a single entity to approximately one-third of the total flexible use spectrum made available in the 28 GHz, 37 GHz, and 39 GHz bands. However, given the superior propagation characteristics of below-30 GHz spectrum, as well as the limited opportunity smaller bidders will have to acquire licenses for the 28 GHz band, U.S. Cellular proposed that the Commission adopt a rule that would prohibit a single entity from acquiring more than one-half of the 24 GHz band spectrum.

Although this limit would permit a single entity to acquire as much as 300 megahertz in the 24 GHz band, it nevertheless would promote competition both in the auction and the industry by requiring that at least three different entities are able to acquire 24 GHz band licenses in each market. At a minimum, U.S. Cellular urged the Commission to seek comment in the *Second Further Notice of Proposed Rulemaking* on applying a pre-auction aggregation limit to the new flexible use mmW bands. U.S. Cellular explained that, because the Commission last year applied the existing pre-auction aggregation limit collectively to all of the then-existing flexible use mmW bands, the Commission should not exclude the additional bands that will be addressed in the upcoming order from that existing aggregation limit, or decline to adopt new aggregation limits for these bands, without providing interested parties with an opportunity to comment on this issue.

This notice of *ex parte* presentation is being filed electronically in the above-referenced docket pursuant to Section 1.1206 of the Commission's rules.

Respectfully submitted,  
HOLLAND & KNIGHT LLP

/s/  
Leighton T. Brown  
*Counsel for United States Cellular Corporation*

Enclosure

cc (via email): Chairman Ajit Pai (Ajit.Pai@fcc.gov)  
Rachael Bender (Rachael.Bender@fcc.gov)

# The 100 MHz approach is more flexible

Example 1:  
Three winners

Bidder	Demand
A	300 MHz
B	200 MHz
C	200 MHz

Draft Order Approach

Lower	Upper
C	A
	A
	B
	B

100 MHz Approach

Lower	Upper
C	A
C	A
	A
	B
	B

Example 2:  
Five winners

Bidder	Demand
A	200 MHz
B	200 MHz
C	100 MHz
D	100 MHz
E	100 MHz

Draft Order Approach

**Not  
Feasible!**

100 MHz Approach

Lower	Upper
B	A
B	A
	C
	D
	E