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June 19, 2019

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

**Re: ET Docket No. 18-295, GN Docket No. 17-183; *Unlicensed Use of the 6 GHz Band; Ex Parte Communication***

Dear Ms. Dortch:

On behalf of the Fixed Wireless Communications Coalition (FWCC), pursuant to Section 1.1206(b)(2) of the Commission's rules, I am filing this notice of oral *ex parte* communications in the above-referenced dockets.

On Monday, June 17, 2019, the three undersigned of this firm, counsel for the FWCC, met separately with Umair Javed, Legal Advisor to Commissioner Rosenworcel, and William Davenport, Legal Advisor to Commissioner Starks.

We discussed several key concerns Fixed Service users have regarding the ongoing 6 GHz band proceeding, as summarized in the attached handout.

Mr. Davenport asked about the number of distinct 6 GHz Fixed Service sites (as opposed to links). Treating antenna locations that are separated by at least one second of latitude or longitude as separate sites, there are 37,033 such 6 GHz Fixed Service sites.

Please contact me with any questions.

Ms. Marlene H. Dortch, Secretary, FCC  
June 19, 2019  
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Respectfully submitted,



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Donald J. Evans  
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Seth L. Williams  
Counsel for the Fixed Wireless  
Communications Coalition

Cc: William Davenport  
Umair Javed

# Unlicensed Use of the 6 GHz Band

ET Docket No. 18-295

GN Docket No. 17-183

## Deploying 6 GHz RLANs While Protecting the Fixed Service

Fixed Wireless Communications Coalition



June 17, 2019



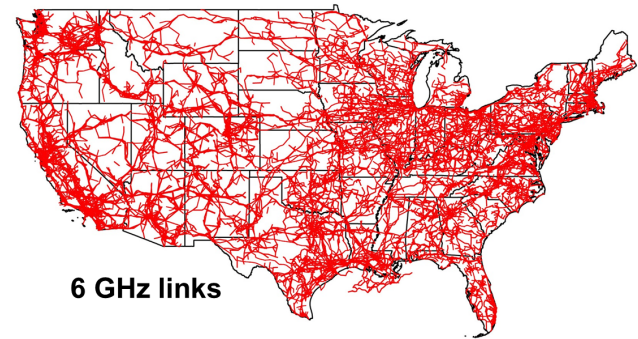
## About the FWCC

- ❑ Companies, associations, individuals interested in terrestrial fixed microwave
- ❑ Formed in 1998, speaks for the fixed service community
- ❑ Active in 70+ FCC matters plus NTIA, FAA, GAO, courts
- ❑ Membership includes:
  - microwave equipment manufacturers
  - fixed microwave engineering / frequency coordination firms
  - licensees of fixed microwave systems (and/or associations)
  - communications service providers (and/or associations)
  - major users and/or associations
  - backhaul providers, communications carriers
  - telecommunications attorneys and engineers.



## About 6 GHz Fixed Service Microwave

- ❑ 97,000 U.S. links
- ❑ Safety-critical services, including:
  - synchronizing railroad trains
  - control of petroleum and natural gas pipelines
  - balancing the electric grid
  - backhaul to dispatch public safety and emergency vehicles
- ❑ Plus large amounts of business and market data
- ❑ 6 GHz is the only fixed service band that can span tens of miles.



**6 GHz links**

## Fixed Service Reliability

- ❑ Extremely high:
  - safety-related links: 99.9999%
    - 30 seconds outage per year
  - most others: 99.999%
    - 5 minutes outage per year
- ❑ Links typically operate uninterrupted for years
  - even rare RLAN-caused failures will eat up years' worth of outage allowance
- ❑ The FWCC's only goal in this proceeding is to keep reliability levels unchanged.



## RLAN Proposal

- ❑ Deploy 958,062,017 unlicensed RLANs in the 6 GHz bands
- ❑ Protect the fixed service with Automatic Frequency Control (AFC), but exclude:
  - indoor RLANs at 30 dBm (1 watt)
  - outdoor RLANs at 14 dBm (25 milliwatts)
- ❑ Seek to design the AFC for maximum RLAN spectrum – despite certainty of interference to the fixed service.

## Faulty RLAN Argument #1

- ❑ RLAN proponents predict low risk of interference because:
  1. indoor RLANs are blocked by building walls
  2. indoor RLANs are outside the fixed service receiver main beam
  3. an RLAN in the main beam is too far away to cause interference
  4. an interfering RLAN probably won't use up all of the receiver's fade margin
  5. an interfering RLAN may just cause a slowdown, not a complete outage
- ❑ Items 1-3 are demonstrably incorrect in large numbers of cases
- ❑ Even if true, predicts unlikely interference from one RLAN in a typical location
- ❑ Use of hundreds of millions of RLANs gives a very different result ...



## FWCC Response

- ❑ RLAN proponents project 958,062,017 devices
- ❑ Fixed service interference usually caused by one emitter in an unlikely location (line-of-sight to the fixed service receiver)
  - if the probability of one RLAN being in an interfering location were one in a trillion, 958,062,017 RLANs would cause near-certain interference into 90+ fixed service links\*
- ❑ Analogy:
  - odds of one ticket winning a MegaMillions jackpot are 1 in 259 million
  - buy 958,062,017 tickets: the odds of winning at least one jackpot exceed 97.5 percent
- ❑ Nothing in the record rebuts the inevitability of interference from large numbers of RLANs.

\* Calculations: FWCC at 21-23 (March 18, 2019)

## Faulty RLAN Argument #2

- ❑ RLAN interests use propagation models that rely on typical terrain and clutter
  - valid for assessing statistical performance – e.g., cell coverage
  - invalid for assessing effects of an individual RLAN
- ❑ Propagation models miss the lone interfering emitter in an unlikely location
  - these cause most real-world interference
  - RLAN proponents dismiss them as “corner cases”
  - although infrequent, they cause severe problems if not planned for
- ❑ **It is reckless to assume terrain and clutter on every path because it is there on a typical path**
  - the AFC must assume free-space propagation unless terrain and clutter are known
  - (this one factor accounts for most differences between RLAN and FS interference predictions.)

## The Law Requires Fixed Service Protection

- ❑ D.C. Circuit: the FCC can lawfully authorize unlicensed devices only where it has determined they do not present a significant potential for causing harmful interference to licensed services\*
- ❑ The un rebutted record<sup>†</sup> shows that hundreds of millions of RLANs are certain to cause harmful interference without universal and adequate AFC control
  - to allow inadequately controlled RLANs would violate the Communications Act.

\* *ARRL v. FCC*, 524 F.3d 227, 234-35 (D.C. Cir. 2008)  
(construing Section 301 of Communications Act)

<sup>†</sup> *E.g.*, *Nokia (Bell Labs)* at 4-5 (Feb. 5, 2019);  
*Comsearch* at 8-15 (Feb. 15, 2019); *FWCC* at 23-26,  
29-31 (March 18, 2019); others



## One Last Point ...

- ❑ Technical details of the AFC are in dispute:
  - interference criterion, guard bands, fade margin incursion, default propagation, database, frequency of updates, vertical RLAN location, client probe signals, reporting interference, phased rollout, point-to-point and point-to-multipoint RLANs, moving vehicles
- ❑ The fixed service industry asks only for measures that are verifiably necessary to maintain its reliability.



## Conclusion

- ❑ Proper AFC design, with all RLANs under AFC control, will adequately protect the fixed service
  - eliminating significant potential for harmful interference is necessary as a matter of law
  - uncontrolled RLANs will cause interference – and cannot be turned off
- ❑ We concede full AFC control may reduce RLAN spectrum at some locations
  - protecting licensed users is the cost of unlicensed access to the spectrum.



# Thank you!

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