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May 3, 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 written and oral *ex parte* communications in the above-referenced dockets.

On Wednesday, May 1, 2019, George Kizer, a member of the FWCC, accompanied by Mitchell Lazarus, Cheng-yi Liu, and the undersigned all of this firm, as counsel for the FWCC, met with Bahman Badipour, Stephen Buenzow, Peter Daronco, Julius Knapp, Paul Murray, Nicholas Oros, Aspasia Paroutsas, Blaise Scinto, Jeffrey Tignor, and Hugh VanTuyl of the Commission staff.

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

Respectfully submitted,



Cheng-yi Liu  
Mitchell Lazarus  
Seth L. Williams  
Counsel for the Fixed Wireless  
Communications Coalition

Cc: FCC meeting participants

# Unlicensed Use of the 6 GHz Band

ET Docket No. 18-295

GN Docket No. 17-183

## Authorizing RLANs While Protecting the Fixed Service

Fixed Wireless Communications Coalition



May 1, 2019



## Introduction

- ❑ Goal: RLANs cause no significant increase in Fixed Service (FS) outages or slowdowns
  - maintain current FS reliability at 99.999% or 99.9999%
  - even rare interference from RLANs will reduce this reliability.



## RLAN Proponents Underestimate FS Interference

1. Misuse of probabilistic arguments
2. Reliance on FS fade margin and adaptive modulation
3. Reliance on typical (not actual) propagation.

## Probabilistic Arguments – 1

- ❑ RLAN pleadings combine assumptions to predict unlikely interference, e.g.:
  - indoor RLAN is adequately blocked by building walls \*
  - indoor RLAN is below FS receiver main beam \*
  - RLAN in main beam is too far away to cause interference \*
  - interfering RLAN probably won't use up all of the receiver's fade margin
  - interfering RLAN may just cause a slowdown, not a complete outage
- ❑ At best this approach predicts unlikely interference from one RLAN in a typical location
- ❑ Projected use of hundreds of millions of RLANs requires a different calculation.

\* Factually wrong in a large fraction of cases

## Probabilistic Arguments – 2

- ❑ RLAN proponents project 958,062,017 devices
- ❑ Even if the probability of one RLAN causing interference is only one in a trillion:
  - overall FS interference probability is 0.1% \* – interference into 96 FS links
- ❑ But proper AFC design can maintain full FS reliability.

\* For calculations, see Reply Comments of the Fixed Wireless Communications Coalition at 21-23 (filed March 18, 2019)

## Reliance on FS Fade Margin & Adaptive Modulation

- ❑ RLAN proponents say:
  - FS receiver fade margin will absorb an interfering RLAN signal;
  - if interference occurs during a deep fade, the FS receiver will shift to a slower modulation to avoid an outage
- ❑ FS users pay for fade margin and adaptive modulation to achieve reliability
  - any RLAN interference reduces reliability
- ❑ AFC cannot tell how much – or if any – fade margin is available on a link
  - FS designers provide minimum fade margin for needed reliability
  - even links having little or no available fade margin are entitled to protection
- ❑ AFC must not take fade margin and adaptive modulation into account
  - these are not public property available to RLAN providers.

## Reliance on Typical (not Actual) Propagation

- ❑ 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
- ❑ Most FS interference comes from one emitter in an unlikely line-of-sight location
  - propagation models miss these instances
  - RLAN interests improperly dismiss these as “corner cases”
    - although relatively rare, they will cause severe problems if not planned for
- ❑ AFC must assume free-space propagation unless terrain and clutter are known
  - **reckless to assume attenuation on a particular path because it is there in a typical path**
  - (this one factor accounts for most differences between RLAN and FS interference predictions.)



## How to Protect the FS

- ❑ Necessary measures:
  - all RLANs under AFC control – independent of FS and RLAN industries
  - I/N = -6 dB criterion
  - free-space propagation unless terrain and clutter are known
  - guard bands for adjacent channel protection
  - fully accurate AFC database with daily updates, easy correction of FS errors
  - accurate vertical RLAN location or worst-case assumption
  - no active client probe signals
  - central point for reporting interference
  - defer until initial rollout is working:
    - point-to-point and point-to-multipoint
    - operation in moving vehicles (unless geofenced).

## The Law Requires Adequate FS Protection

- ❑ Multiple RLAN interests oppose each of the above measures
  - reason: more FS protection will leave less RLAN spectrum at some locations
- ❑ The FCC must prioritize:
  - unlicensed RLANs – casual Internet access
  - licensed FS – extremely reliable, carrying safety services
- ❑ D.C. Circuit: the FCC can authorize unlicensed devices only where it has determined they will not cause harmful interference to licensed services \*
  - consistent with all FCC precedents.

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

# Thank you!

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*FIXED WIRELESS COMMUNICATIONS COALITION*