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

**Re: ET Docket No. 13-49, *Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band Ex Parte Communication***

Dear Ms. Dortch:

On behalf of the Fixed Wireless Communications Coalition, Inc. (FWCC), pursuant to Section 1.1206(b)(1) of the Commission's Rules, I am electronically filing this written *ex parte* communication in the above-referenced docket.<sup>1</sup>

On Wednesday, September 11, 2013, representatives of the FWCC reiterated our request that the Commission drop its proposal for a penalty on the output power for 5.8 GHz unlicensed systems whose antenna gains exceed 23 dBi. We asked the Commission instead to keep the present rule that allows unlimited antenna gain with no power penalty.<sup>2</sup> The Commission staff asked us what fraction of 5.8 GHz unlicensed systems have antenna gains over 23 dBi. The staff also expressed interest in the applications for which FWCC members use high-gain systems.

<sup>1</sup> The FWCC is a coalition of companies, associations, and individuals interested in the fixed service—i.e., in terrestrial fixed microwave communications. Our membership includes manufacturers of microwave equipment, fixed microwave engineering firms, licensees of terrestrial fixed microwave systems and their associations, and communications service providers and their associations. The membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, cable TV providers, backhaul providers, and/or their respective associations, communications carriers, and telecommunications attorneys and engineers. Our members build, install, and use both licensed and unlicensed point-to-point, point-to-multipoint, and other fixed wireless systems, in frequency bands from 900 MHz to 95 GHz. For more information, see [www.fwcc.us](http://www.fwcc.us).

<sup>2</sup> See Letter from Mitchell Lazarus, Counsel for the FWCC, to Ms. Marlene H. Dortch, Secretary, FCC (filed Sept. 13, 2013).

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### **HIGH PERCENTAGE OF HIGH-GAIN SYSTEMS**

An informal poll of FWCC members suggests that a very large majority of unlicensed 5.8 GHz systems used in industrial and telecommunications applications have antenna gains that exceed 23 dBi.

The two leading global suppliers of point-to-point systems report, respectively, that “all” and “close to 100%” of their 5.8 GHz antenna sales are above 23 dBi. One company adds that it sells these systems in large numbers, including sales to Tier 1 carriers.

The users give a similar picture. An electric utilities group tells us that imposing a power penalty above 23 dBi would affect somewhere between 85 and 100% of their 5.8 GHz unlicensed links. An oil and gas group reports the most common range of antenna gains to be 33–38 dBi, with some companies using smaller dishes with gains of approximately 28–30 dBi. A leading U.S. Tier 1 wireless carrier reports having between 1600 and 2000 unlicensed links in operation, “virtually all” with antenna gains over 23 dBi.

The applications discussed below for 5.8 GHz unlicensed links bear out these findings. Many of the applications entail long ranges, which in turn require high EIRP.

### **TYPICAL HIGH-EIRP APPLICATIONS**

*Oil and gas companies* make extensive use of unlicensed point-to-point links to extend data transmission to and among exploration and production sites. The urgency of establishing communications with new exploration sites often precludes waiting for Part 101 frequency coordination and licensing. The same is true for the rapid deployment of communications links to serve short term subcontractor needs, and for disaster recovery and risk prevention processes.

These companies, and a major facilities provider that serves them, emphasize that a limit on EIRP would significantly inhibit their use of the 5.8 GHz band. In the Gulf of Mexico, for example, where point-to-point radios provide communications links to drilling and production platforms, long links are needed because intermediate sites for multiple shorter links are not feasible. Platforms are typically separated by tens of miles and are less than 200 feet above sea level. The long distances and limited antenna elevations impose limitations on available path lengths and link reliability. Most of these links must operate near the physical limits of power and height.

Typical oil and gas industry uses for point-to-point links include SCADA (remote monitoring and control of well heads, pipelines, drilling rigs, etc.), video surveillance, Wi-Fi, two-way voice, VoIP, and remote enterprise network access. Reliable communications are needed also to provide personnel with health and safety support, and for telemetry that is critical to safe operation of equipment and environmental protection. The remote and harsh environments of exploration and production sites make most other communications options infeasible.

Where reliability is paramount, 5.8 GHz can provide frequency diversity alongside 6 GHz links through the same antennas. (The Commission’s rules prohibit using multiple licensed channels for frequency diversity.<sup>3</sup>) The resulting improvement in reliability is comparable to that from space diversity, but cuts the number of needed antennas in half, which results in large savings in antennas and tower leasing costs. (At some sites the option of adding another large antenna for space diversity is not feasible at any cost.)

The Commission’s proposed EIRP limit would eliminate unlicensed use for many of these applications.

*Electric utilities* likewise make heavy use of 5.8 GHz unlicensed links for applications such as:

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<sup>3</sup> 47 C.F.R. § 101.103(c).

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- SCADA (transmission substations, interconnecting tie substations, plant switchyard substations);
- remote site trunked radio systems (via T1 supporting both voice and data channels);
- communications to transmission substations for protective relaying, controlling breakers, monitoring real-time power flows, and returning hourly data and status information;
- communications to member cooperatives;
- overbuild of licensed paths to provide additional capacity without additional microwave antennas and waveguides;
- provision of Ethernet pipes for data backups between operation computer systems and corporate IT departments and backup control centers;
- voice services (for surveillance, internal calls, and internal video conference); and
- business WAN connectivity (for email, Internet access, and business applications).

The notes above concerning gains in reliability due to 5.8 GHz unlicensed links apply here as well.

**Railroads** depend on unlicensed 5.8 GHz point-to-point links to help tie together their widely distributed infrastructure. Applications include train coordination and control, backhaul of communications with personnel on trains, communications with railroad staff at locations along the route, and rail yard video links.

In some cases the 5.8 GHz unlicensed links parallel licensed communications to improve reliability, in the same manner as described above for oil and gas companies.

**Wireless carriers** use unlicensed 5.8 GHz point-to-point links for carrier grade transport, primarily for cell site backhaul. The links can be (and are) designed to support high availability traffic requirements.

Often an unlicensed link is intended initially as a temporary measure, to get service up and running at a cell site while Part 101 frequency coordination and licensing processes are underway. But the carriers, like most businesses, are reluctant to tamper with something that works. Seeing that the unlicensed link provides satisfactory service, the carrier may abandon plans for the licensed link and continue to rely on the 5.8 GHz facility, sometimes for many years.

### **USE IN EMERGENCIES**

Long unlicensed links at 5.8 GHz support emergency and disaster relief after hurricanes, tornadoes, flooding, fires, and other events that damage telecommunications infrastructure. First responders and emergency personnel need reliable communications to coordinate efforts and bring help where it is needed. In situations that cannot wait for even expedited frequency coordination and licensing, unlicensed operation allows for rapid start-up. As one recent example, the band was heavily used in recovery from the Deepwater Horizon disaster.

Unlicensed links also provide prompt restoration of service to residents of the affected area, allowing people to receive up-to-date information from the authorities and to stay in touch with loved ones.

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#### IRRELEVANCE TO TDWR INTERFERENCE

We understand the Commission's purpose in considering an EIRP limit at 5.8 GHz is to help control the incidence of harmful interference into Terminal Doppler Weather Radars (TDWRs) at airports. There is no concern about interference from compliant 5.8 GHz transmitters, inasmuch as the TDWRs operate at a safely removed frequency near 5.6 GHz. Indeed, we cannot find any instance of a compliant 5.8 GHz radio at any EIRP causing TDWR interference. Some cases of interference, however, have traced to 5.8 GHz transmitters that were improperly modified to operate in the TDWR band.<sup>4</sup> The Commission may reason that eliminating high-EIRP 5.8 GHz transmitters from the market may cut back the numbers of high-EIRP devices available to be improperly retuned to TDWR frequencies.

We do not believe this measure would be effective. Even the Commission's proposed rule would allow the continued marketing of 5.8 GHz systems with no limit on antenna gain—albeit with a power penalty at antenna gains over 23 dBi. Under the proposed rule, an unscrupulous operator who wished to convert a 5.8 GHz system for high EIRP at lower frequencies would have to increase the power, as well as retune the frequency. We doubt this added step would constitute a significant deterrent.

Ironically, one energy company's use of the 5.8 GHz band resulted from negotiations between the company and the Dallas Fort Worth airport authority. The airport had requested that other bands not be used nearby due to congestion. The 5.8 GHz band network has been operating at that location for five years without problems.

Overall, the harm to the public interest from loss of the applications outlined above would far outweigh any limited benefits in the way of protection to TDWR operation. The Commission can better address concerns about modifications to high-EIRP systems more directly: with a requirement for software locks that make it difficult to tune outside the certified band,<sup>5</sup> and perhaps by strengthening Section 15.203 for this band specifically, to prevent the attachment of high-gain antennas to transmitters other than those for which they were certified.

Please contact me with any questions.

Respectfully submitted



Mitchell Lazarus  
Counsel for the Fixed Wireless  
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cc: Navid Golshahi  
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<sup>4</sup> *E.g., Argos Net, Inc.*, 27 FCC Rcd 2786 (Enforcement Bur. 2012) (transmitter certified for 5745-5825 MHz, found to be operating at 5605 MHz).

<sup>5</sup> *Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, Notice of Proposed Rulemaking, 28 FCC Rcd 1769 at ¶ 51 (2013) (proposing to require security features so that third parties cannot reprogram U-NII devices outside certification parameters).