

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Amendment of Parts 2, 15, 80, 90, 97, and)	
101 of the Commission's Rules Regarding)	
Implementation of the Final Acts of the)	ET Docket No. 15-99
World Radiocommunication Conference)	
(Geneva, 2012) (WRC-12), Other Allocation)	
Issues, and Related Rule Updates)	
)	

**COMMENTS OF THE
NATIONAL SPECTRUM MANAGEMENT ASSOCIATION**

The National Spectrum Management Association ("NSMA") hereby respectfully submits its comments on the Notice of Proposed Rulemaking in the above-captioned proceeding¹. NSMA supports the Commission's efforts to increase microwave spectrum efficiency by addressing potential interference and frequency coordination conflicts². NSMA strongly objects to the proposal to allow aeronautical mobile telemetry transmissions in the fixed microwave service bands between 5925 and 6700 MHz. As explained below, permitting a mobile service, especially an aeronautical mobile service, to operate co-channel with a nationwide ubiquitously deployed fully coordinated fixed service, produces a high probability of harmful interference (for separation distances up

¹ Office of Engineering and Technology's Report and Order, Order and Notice of Proposed Rule Making, Implementation of World Radiocommunication Conferences WRC-12 and Other Issues, ET 15-99 (rel. April 27, 2015) ("*Public Notice*").

² NSMA is a voluntary association of individuals involved in the spectrum management profession including service providers, manufacturers, frequency coordinators, engineers and consultants. NSMA's goal is to promote rational spectrum policy through consensus views formulated by representatives of diverse segments of the wireless industry.

to 425 km³). In addition, due to the nature of the interferer, it will be virtually impossible to identify and correct the cause of the interference.

NSMA is particularly concerned with potential spectrum sharing in the 5925 to 6700 MHz bands.⁴ As the Commission in its notice¹ observed, “Frequencies in the 5925-6700 MHz band are available for assignment to transmitting earth stations and to the Part 101 Fixed Microwave Services. Part 101 uses include common carrier, business, industrial, police, fire, utility, and transportation system operations. In addition, frequencies in this band are used to provide wireless backhaul capacity which is vital for the deployment of competitive wireless broadband services. ... Table 4: Number of Links and Earth Stations Authorized to Operate in the 5925-6700 MHz Band Grand total for the 5925-6700 MHz band = 106,301”. NSMA notes that the number of paths in this frequency range is increasing at over 12,000 duplex paths per year. The number of incumbent paths would be impractical to coordinate with a transmitter in the sky.

As the Commission noted, “AMT test ranges are capable of supporting at least 2-6 simultaneous tests. A major test flight can involve as many as ten separate aircraft generating telemetry on many data and video channels that require nearly the entire available spectrum (i.e., 125 megahertz of primary MS spectrum), using current technologies. It is not unusual for manned aircraft to traverse thousands of kilometers in test flights lasting 10-12 hours.”

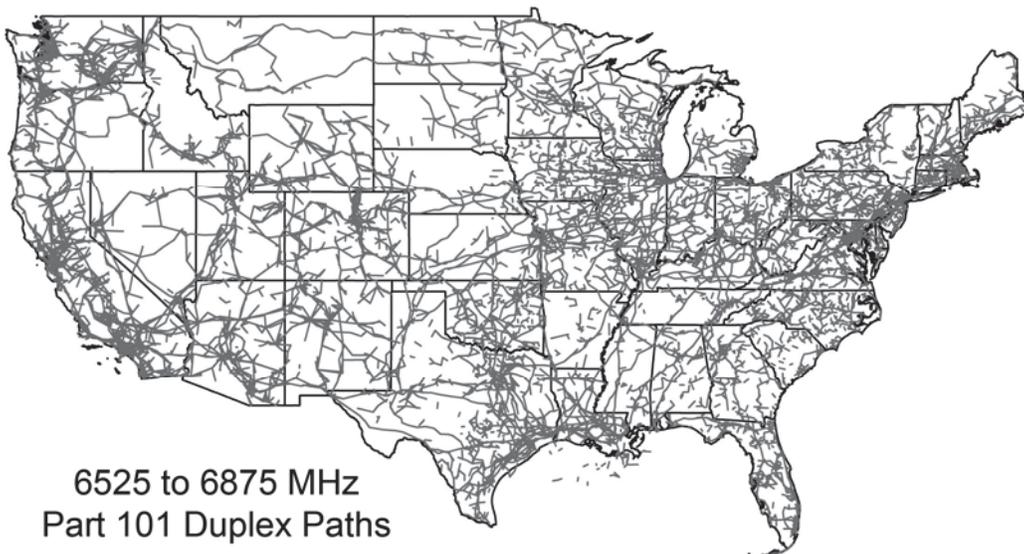
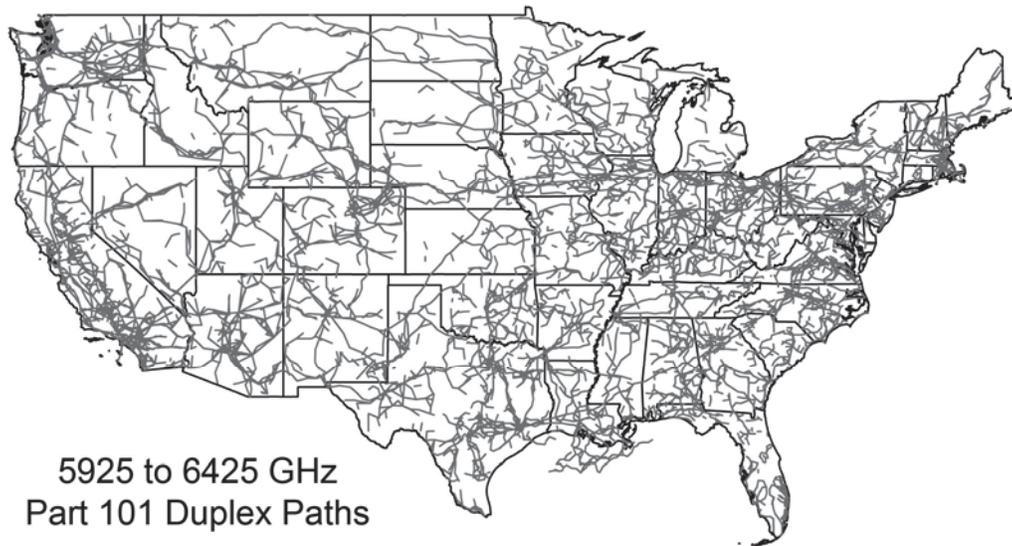
³ ITU-R Report M.2119, Sharing between aeronautical mobile telemetry systems for flight testing and other systems operating in the 4400-4940 and 5925-6700 MHz bands.

⁴ Sharing Between AMT and Incumbent Services in the 4400-4940 MHz and 5925-6700 MHz Bands, Section C, Paragraphs 206 through 221.

The Commission expressed two primary concerns:

1. Are there technical approaches, coordination procedures, or analytical techniques (such as frequency coordination, shared network architectures, dynamic selection of operating frequencies, or spectrum use only in specific geographic areas) that would ensure compatibility with existing services in these bands?

NSMA Response: Part 101 services cover essentially all of the geographic area of the Continental United States.



Most of the radio paths use several frequencies and are operating duplex transmission full time. For terrestrial links the coordination radius around receivers is 200 miles in front of the antenna and 125 miles to the side or back. Please refer to Figure One.

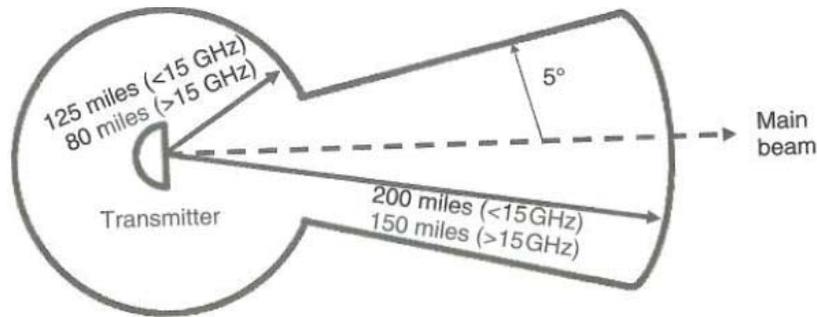


Figure One: NSMA FCC band coordination area

For calculation of interference from airborne transmitters, the coordination radius would need to be much larger since the probability of line-of-sight between the interfering AMT transmitter and a victim fixed service microwave receiver is higher than for terrestrial transmitters. Given that AMT airborne transmitters will travel thousands of miles using over 100 MHz of spectrum and be several miles in the air, at any given time the AMT transmitter will adversely impact receivers over thousands of square miles. These unfavorable operating conditions preclude the use of most frequency sharing approaches. Adding AMT wideband frequencies over wide geographic areas is not practical.

2. What are the costs and benefits and advantages or disadvantages of adding AMT allocations to these bands? Is sharing with AMT the highest valued use of this spectrum or should we consider other potential licensed or unlicensed uses on a shared basis?

NSMA Response: Currently the Part 101 frequency bands between 5925 and 6875 are highly utilized. Their continued use requires prior coordination of very narrow beamwidth terrestrial systems using high gain antennas. To allow a wideband airborne transmitter into this spectrum would significantly constrain efficient utilization of the fixed service bands. In general, NSMA supports frequency sharing among compatible services; over the years NSMA has developed a host of guidelines and sharing methodologies for frequency coordination among the fixed services. This includes both Federal and non-Federal spectrum sharing which is ongoing at this time using NSMA guidelines. However, successful frequency sharing requires compatible services. Fixed and mobile services are generally not compatible, hence the allocation of these services to separate bands. An airborne transmitter will irradiate thousands of square miles. Fixed terrestrial transmitter radiation using narrow beamwidth antennas is much more restricted and, more importantly, since it is fixed, can be modeled in computer databases used to calculate potential interference to and from other fixed stations. This process is the basis for the very dense use of these bands across the country as shown in the foregoing charts. Furthermore, a single airborne transmitter will serve only one user, while the terrestrial service, using NSMA guidelines, successfully serves tens of thousands.

As the Commission noted, currently the Part 101 bands support critical public safety, power system and railroad needs not easily provided by other means. Given the operational characteristics of AMT, if it is allowed to operate in the proposed frequency bands, interference into existing users seems inevitable – there are no unused geographic areas or unused frequencies when viewed from the airborne AMT

transmitter's perspective. To adversely impact critical Part 101 services is clearly not in the public interest.

The AMT test areas would not pose a problem to the fixed service if they were located offshore at least 425 km from the shoreline. It is noted that the United States government has island test facilities.

For the foregoing reasons, NSMA opposes allowing AMT services into the Part 101 frequency allocations above 5900 MHz.

NSMA applauds the Commission's efforts to optimize frequency utilization within the Federal and non-Federal spectrum. New ideas are strongly encouraged, but proposals harmful to a wide base of incumbent services should be rejected. From that perspective NSMA requests the Commission give careful consideration to the foregoing comments.

Respectfully Submitted,

**NATIONAL SPECTRUM
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