Airspan Networks Response

to NTIA Request for Comments on Strategy to Secure 5G

I. Introduction

Airspan Networks Inc submits the following comments in response to the Request for Comment (RFC) from the National Telecommunications and Information Administration (NTIA) to assist the Secretary of Commerce in developing a *Strategy to Secure 5G*. Specifically, NTIA requested "information as to how the U.S. Government can best facilitate the accelerated development and rollout of 5G infrastructure in the United States and with our international partners". NTIA posed specific questions in the RFC under four broad category types, "Facilitate 5G Domestic Rollout, Assess Risks to and Identify Core Security Principles of 5G Infrastructure, Address Risk to US Economic and National Security during Development and Deployment of 5G Infrastructure Worldwide, Promote Responsible Global Development and Deployment of 5G", which Airspan addresses in turn below.

Line of Effort One: Facilitate Domestic 5G Rollout.

To best facilitate the domestic rollout of 5G technologies, the U.S. Government should foster the domestic commercial ecosystem of participants. Vendor diversity naturally promotes competition and investment in R&D, provided there are clear goal posts. In this case, equipment manufacturers, software developers, cloud providers, and system integrators take their cues from the network providers. In 5G, the U.S. Government has an opportunity to guide large Mobile Network Operators (MNOs) and Rural Competitive Carriers in a direction that results in clear goal posts for 5G ecosystem participants. This will streamline R&D and promote U.S. leadership in 5G.

Specifically, the U.S. should enforce minimum "spectrum utilization scores" for all carriers using licensed spectrum. This motivates that the most advanced technologies be deployed and emphasizes "Bits/Hz per Square Mile" rather than a "loudest macro tower radio wins" environment. This ensures ecosystem participants focus on the advancement of 5G technologies over legacy equipment.

To help MNOs and Rural Carriers deploy new 5G infrastructure, the U.S. Government can also focus on Small to Medium-Size Enterprises (SMEs) and commercial real estate owners with access to infrastructure power and location. By offering direct assistance and incentives to these entities to host, it reduces the dependency on large inefficient towers and further promotes technological advancement. The same strategy applies to City and Local Governments. A financial incentive should be added to promote *Smart City* projects

that provide shared frequency neutral host 5G (i.e. CBRS band) in addition to other municipal services. This will promote rapid deployment of new 5G technologies.

Market based incentives will certainly lead to increased R&D, but the U.S. currently lacks a substantive program to fund specific initiatives. Airspan recommends that the U.S. prop up a "Bell Labs" style alliance of Software, Radio Frequency, Hardware and Manufacturing partners with a $350mm investment to regain the high value process on top of American 5G silicon and trusted international partnerships. The program should fund specific initiatives in the following areas:

- *5G Total Spectral Efficiency: to get the most out of our airwaves*
- *C Block Radio Subsystem: allows US vendors to prepare ahead of the C Block auction*
- *5G In Building Neutral Host Software Solutions*
- *Smart City Pole Attach 5G Systems*
- *Advanced Industrial Automation Networks based on 5G*

Line of Effort Two: Assess Risks to and Identify Core Security Principles of 5G Infrastructure.

Promoting the domestic commercial ecosystem of 5G participants indirectly results in more secure and trusted networks. Vendor diversity and virtualized networks should lead to an architecture that is less susceptible to attack, but potentially difficult to police. Frontline solutions are limited to trusted supplier programs and interoperability demonstrations for which Airspan recommends the U.S. Government consider the following factors:

- *Country of Origin, especially as defined by high dollar value content like Silicon (less so for low tech components like Printed Circuit Boards, Capacitors, Resistors etc.)*
- *Manufacturing with trusted supply chain EMS companies with the option to utilize US based factories*
- *Number of working base stations in the US 4G ecosystem (to demonstrate track record)*
- *Interoperability demonstrations (to demonstrate track record)*
- *Trusted Supplier Programs like Palindrome Inc exist today for the major telephone companies and should be extended*

Line of Effort Three: Address Risks to U.S. Economic and National Security during Development and Deployment of 5G Infrastructure Worldwide.

The development and deployment of 5G Infrastructures worldwide presents a huge opportunity for the U.S. and its enterprises. The market for export is enormous as the $1T cap-ex cycle for 5G is just beginning. Encouraging a specific strong US domestic lineup of equipment and software infrastructure providers allows other nations to "Just Say No" to geopolitically hostile alternatives while not having to accept inferior legacy

equipment operating on proprietary closed-end systems. This effort renders at least $500BLN in addressable export to allies, which is inaccessible now due to the dominance outside the U.S.

Furthermore, not participating in the deployment of 5G infrastructure worldwide poses a national security threat. The U.S. Government needs to promote U.S. based participants and prohibit suppliers from regions that threaten national security as well as those who engage in intellectual property theft. Airspan proposes limiting legacy providers with foreign ownership to the below schedule of base stations:

- *2022: 90%*
- *2025: 75%*
- *2030: 50%*

Supporting U.S. vendors to participate in the 5G ecosystem is critical to the nation's economic well-being. Airspan suggests a "Team America" style financial incentive for Carriers and Cable MSO's to integrate additional American vendors into their BSS/OSS operations architecture, specifically $10mm of cost per Tier 1 Carrier or National MSO. At the same time, the U.S. must enforce the *standards of spectral efficiency.*

The U.S. should also tailor procurement, tax incentive, direct investment, and grants to qualifying 5G infrastructure suppliers, with a preference for small business as defined by the SBA size standards.

To further narrow national security gaps and ensure the economic viability of the United States industrial base, Airspan recommends offering a $12.5 R&D grant to specifically support the development of the Country Level Security Gateway. The Gateway would allow the U.S. Government to issue "nativebootcode" start-up wrap around the vital aspects of 5G Open RAN architecture to be embedded in the physical DU (Distributed Unit) level.

Line of Effort Four: Promote Responsible Global Development and Deployment of 5G.

Airspan is a founding member of the Open RAN Policy Coalition and proud member of the ORAN Alliance, both of which seek to promote international cooperation in the development of open interoperable 5G technologies. Promoting international standards of interoperability leads to vendor diversity and lower supply chain risk. Airspan feels strongly that the U.S. should explicitly ban infrastructure products from regions deemed a security threat and from suppliers who have intellectual property theft as their primary business model.