

May 29, 2014

Julius Knapp  
Chief  
Office of Engineering and Technology  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, DC 20554

RE: Request for Experimental License for LTE Broadband Testing at Linthicum, MD,  
File Number 0366-EX-PL-2014.

Dear Mr. Knapp

Booz Allen Hamilton Engineering Services, LLC (Booz Allen E.S.), requests approval of the above referenced Experimental Authorization application in order to conduct testing and demonstration of Long Term Evolution (LTE) broadband communications in the 700 MHz Band 14 spectrum to develop deployable LTE communications systems for use by Public Safety users and FirstNet.

The frequency ranges involved, 758-768 MHz and 788-798 MHz are licensed on a nationwide basis to the First Responder Network Authority. We understand that concurrence from FirstNet will be required to obtain this authorization.

The authorization will be used to conduct both laboratory and field testing of LTE networks. The laboratory testing will focus on basic configuration, compatibility, application, and interoperability issues associated with different LTE networks and user devices. The field testing will focus on deployable systems operating over a broadband satellite connection. The ability to link together multiple sites via point-to-point links (operating in the 5.8 GHz unlicensed spectrum) to extend coverage will be a key part of the field testing. Actual user devices will be operated on the deployed network in order to determine real world system performance. By being able to temporarily set up deployable LTE sites at various locations within 10km of Linthicum, MD, a variety of

geographies will be available for testing including rural, suburban, urban, and maritime<sup>1</sup>.

In addition to testing, deployable LTE technology may be demonstrated to interested parties from military, government, and public safety user communities. As such, we believe that granting this experimental license is in the public interest and the interest of FirstNet.

Booz Allen Hamilton Engineering Services, LLC, has thoroughly searched the FCC ULS database and has found no co-channel licensees within 50 km of the proposed test location. We have also confirmed through FCC 13-31 that there are no legacy narrowband or broadband public safety incumbents in this band in the State of Maryland.

The test system will consist of a low power laboratory LTE system and up to four deployable full-power LTE systems including both commercial eNodeB radio access network technology from vendor Lemko, Inc, and experimental equipment developed by Booz Allen Hamilton. In the spirit of standards-based multivendor solutions, eNodeB and Evolved Packet Core technologies from other vendors will also be evaluated as available. In addition to the EPC and RAN infrastructure, user devices from a range of vendors consisting of smartphones, tablets, dongles, and vehicular routers will also be evaluated. The goal is to determine employment strategies for single- and multiple-site deployable LTE systems for use by Government, Public Safety, and FirstNet. The deployable systems will be operated on an itinerant, temporary basis only as required by the proposed work. Operation in Band 14 is required in order to accurately test propagation characteristics and the configuration of unique Band 14 vendor products intended for the public safety market<sup>2</sup>.

Band 14 user devices from vendors Elektrobit and Harris Corp. will be tested and additional user devices are being sought from all other vendors having announced products for Band 14 operation. By testing multiple user devices, compatibility and interoperability will be tested and utility for public safety applications will be determined, along with the unique configuration parameters for each device that are necessary to integrate them into a fully functional deployable LTE system.

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<sup>1</sup> All operations will be confined and eNodeB's deployed to prevent coverage from extending unnecessarily beyond this radius.

<sup>2</sup> The configuration of user devices is vendor and device specific and gaining this understanding will assist Booz Allen in offering integrated systems to its clients. This will be of benefit to FirstNet and other Public Safety entities.

The proven Booz Allen Hamilton RapydConnex deployable commercial Ku-band satcom system will serve as the basis for operation of the proposed LTE testing. This system provides high speed satellite communications links, core network routing services, network security, and hosted applications for use by government, military, and public safety users. By combining the proposed LTE network with the RapydConnex platform, a practical architecture for deployable LTE networks is created. This architecture includes the ability for the Evolved Packet Core to be miniaturized and operated at the deployed satcom node or even at each eNodeB location using distributed EPC technology available from vendors such as Lemko.

As part of its application, Booz Allen Hamilton Engineering Services, LLC understands and agrees that operation under this experimental license would be subject to the following conditions:

- The proposed system will not be used for mission critical or safety of life communications.
- Operation is only for a temporary time period of twenty-four months duration.
- This authorization is non-renewable.
- No other rights to this spectrum are conferred through the granting of the authorization.
- Should testing be required after expiration of the authorization, a new application would need to be filed.
- All operations under this authorization are secondary to use by FirstNet and/or other authorized licensees and that the test will be modified, scaled back, or terminated should FirstNet, the FCC, or any other licensed user report harmful interference or upon request of FirstNet.
- Booz Allen E.S. will coordinate activities with any other current or future experimental or STA licensees within or near its area of operations.
- All operations related to the authorization will occur within 10 kilometers of the Booz Allen Hamilton Engineering Services location in Linthicum, MD. eNodeB locations will be situated to confine operations to within this overall radius.
- While 10 MHz bandwidth is the anticipated required bandwidth for FirstNet systems, testing may also be conducted at narrower bandwidths of 5 and 3 MHz to understand performance issues associated with these bandwidths<sup>3</sup>.

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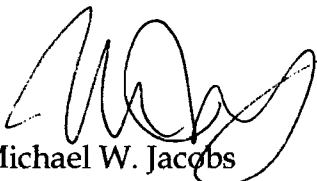
<sup>3</sup> Operation at narrower bandwidths is supported in the 3GPP specification and may be used as an interference reduction measure in deployable systems or in border areas where spectrum must be shared with Canada or Mexico.

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- Booz Allen E.S. will maintain control of the system at all times and **stop buzzer contact information for immediate termination** of any tests underway is **Mike Jacobs at 443 758 5788.**



Michael W. Jacobs

Chief Engineer - Advanced Systems

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Sincerely,

Booz Allen Hamilton  
Engineering Services, LLC