

<Boingo Wireless> STA Exhibit

Date: Sept 11th 2017

Date: Sept 11th 2017

Subject: Public and Redacted Version of Request for Confidential Treatment and Complementary Exhibits

File Number: 1304-EX-ST-2017

To Whom It May Concern:

Boingo Inc. pursuant to 5 U.S.C. § 552 and Sections 0.457 and 0.459 of the Commission's Rules, 47 C.F.R. §§ 0.457, 0.459, hereby requests that certain information complementary to its above-referenced application for Special Temporary Authority (STA) be treated as confidential and not subject to public inspection. The designated information constitutes confidential and proprietary information that, if subject to public disclosure, would cause significant commercial, economic, and competitive harm to Boingo Wireless. As described below, Boingo Wireless's request satisfies the standards for grant of such requests set forth in Sections 0.457 and 0.459 of the Commission's Rules.

In accordance with Section 0.459(b) and in support of this request, Boingo Wireless provides the following information:

1 IDENTIFICATION OF THE INFORMATION FOR WHICH CONFIDENTIAL TREATMENT IS SOUGHT:

Boingo Wireless's request for confidential treatment is limited to information that has been redacted from the STA and Exhibits. Boingo Wireless does not seek to withhold from public inspection information in the STA and associated exhibits necessary for interference mitigation, including applicant name, contact information, test location, frequency, output power, effective radiated power, emission characteristics, and modulation.

Exhibit A – Special Temporary Authority Justification:

Boingo Wireless requests confidential treatment of the the information underlined below and redacted from the publicly filed version of Exhibit A that contains confidential and proprietary information regarding the proposed tests/ experiments:

Consistent with the standards set forth in Section 5.61 of the Federal Communications Commission's (Commission's) Rules, 47 C.F.R. § 5.61, Boingo Wireless requests Special Temporary Authority (STA) to conduct demonstrations of Shared Spectrum experimental Small Cell Base Stations in <Los Angeles, CA>. Operations under this STA would be consistent with the Part 96 rules the Commission has adopted to govern use of the 3.5 GHz band. The STA is sought for a period of 180 days beginning on <Oct 1st 2017> . Boingo Wireless outlines below its need for the requested STA and the reasons that the STA should be granted expeditiously.

The STA is needed to execute operation and performance of Small Cell in the 3.5 GHz band, which the Commission has designated for broader commercial use. The operation of Small Cell Base Stations will be consistent with the Commission's Part 96 rules and the incumbent operators will be protected from any harmful interference.

In <Los Angeles, CA>, Boingo Wireless requests authorization to operate on the frequencies between <3550-3625> MHz, part of 3550-3700 MHz which have been opened for innovative small cell spectrum sharing in connection with the new Citizens Broadband Radio Service (CBRS). Operations across the proposed frequencies will be consistent with the rules for CBRS devices (CBSDs) set forth in Part 96 of the Commission's rules. As stated above and described below, Boingo Wireless will avoid harmful interference to incumbent operations throughout the band, and to operations in adjacent bands.

Planned Operations

Boingo Wireless anticipates performing the following tests under the requested STA. The proposed experimental operations in the 3.5 GHz band will be conducted without harmful interference to other authorized users.

- Small Cell Indoor coverage and performance: Boingo Wireless in collaboration with its Radio supplier will test:
 - The operation of the Small Cell base station to understand the coverage and performance of indoor base stations in the 3.5 GHz band in dense urban environments.
 - The frequency of operation will be limited to 3550 to 3625 MHz.
 - The test site has 2 floors of office space.
 - The base stations will be installed inside the 23rd+24th floors of the building.
 - The performance and operation of a CBSD when instructed by SAS to switch frequency.
 - The impact on an end user when a CBSD has switched its frequency

- **SAS Management of Shared Spectrum:** Boingo Wireless, in collaboration with its SAS Administrator and radio partners, will test spectrum sharing, including General Authorized Access (GAA) registration, CBSD spectrum grant request and SAS response, spectrum grant revocation, and simulated protection scenarios in an operation environment.

Non-Interference Analysis

Operation under the STA will not adversely impact any authorized user of RF Spectrum.

Morphology of Test Site: The test site is surrounded by tall buildings on two sides, which will aid in limiting the signal to areas in very close proximity to the test site.

- The test site is surrounded by many tall buildings
- Right: A 25 story building blocking the signal from reaching more than one city block from the test site
- Left: A 24 story building blocking the signal from reaching more than one city block from the test site

CBSD power will be limited to +10dBm (EIRP) to ensure that very insignificant signal radiates outside the building and hardly any detectable signal can reach one block away from the test site.

Radar Protection (Shoreline): Because the CBSDs will be installed indoors their TX power will be limited to +10 dBm (EIRP), and the site is surrounded by tall buildings on all sides, Boingo Wireless does not expect any interference to Radars that operate on the shorelines.

International Border: <Los Angeles> is more than 2011 km from the nearest Canadian border and over 222 km from the Mexican border. Therefore, no interference to incumbent operations is expected for international operation.

In-Band FSS Protection: The Commission has identified in-band fixed satellite service (FSS) operations in 3600-3700 MHz that require protection under Part 96. Part 96 further requires coordination with any in-band FSS operations within a 150 km coordination contour, operating within the 3650-3700 MHz band. In order to avoid interfering with FSS sites in <Los Angeles, CA>, the frequency of the operation of the test bed will be limited to 3550-3625 MHz.

Adjacent Band FSS Protection: The Commission has identified adjacent band FSS operations in the 3700-4200 MHz that require protection under Part 96. Part 96 requires adjacent band FSS protection within 40km of the FSS site. The City test site is approximately 41.5 km away from nearest adjacent band FSS, Boingo Wireless expects that, with the building and other clutter between the test site and the FSS site, the actual out of band emissions will be even further below this level.

Part 96 requires a blocking level of -60 dBm. Assuming Free Space path loss between a CBSD in Los Angeles and FSS sites in Malibu, CA, the blocking level will be -80 dBm. With the building and other clutter between the test site and the FSS site, Boingo Wireless expects that the actual blocking level will be well below -80 dBm.

Part 90 (GWBL): Due to the limitation of the operation frequency at the test site to 3550-3625 MHz, there will not be any interference with any part 90 GWBL operations in the <Los Angeles, CA> area.

Exhibit B – Technical Information:

Boingo Wireless requests confidential treatment of the information underlined below and redacted from the publicly filed version of Exhibit B that contain confidential and proprietary information regarding the proposed testing in <Los Angeles, CA>:

Applicant Name: Boingo Wireless Inc.

Applicant FRN: 0018298588

Legal Contact Details:

Name of Contact	Nart Bajj
Contact Address	10960 Wilshire Blvd., 23rd Floor, Los Angeles, CA. 90024

Technical Contact Details:

Name of Contact	Nart Bajj
Contact Address	10960 Wilshire Blvd., 23rd Floor, Los Angeles, CA. 90024

Base Station General Information

Equipment	Ruckus Q710 (CBRS)
Quantity	<u>2</u>

Area of Operation	Operation not to exceed 0.06 km from the following geographic center points: Latitude: 34.057824 , Longitude: -118.446028
--------------------------	--

The test site will be a large office where category A Base Stations, with integrated antennas will be placed throughout the interior of the building. No Base Station will be installed on the roof or outside the building.

Amplifier Detail

Antenna	Internal
Type	directional
Quantity	2 per Base Station
Gain	3 dB
Beamwidth at Half-Power Point	Various (60° to 360° Horizontal and 6° to 180° vertical)
Orientation in Horizontal Plane	Various (0° to 360°)
Orientation in Vertical Plane	Various (0° to -60°)

Radio	Modulation	Emission Designator	Bandwidth	Maximum Output Power	Maximum EIRP
	Digital	10M0W7W	10 MHz	<u>50 mW</u>	<u>10 dBm</u>
	Digital	20M0W7W	20 MHz	<u>50 mW</u>	<u>10 dBm</u>

2 IDENTIFICATION OF THE CIRCUMSTANCE GIVING RISE TO THE SUBMISSION

Boingo Wireless is submitting an application for Special Temporary Authority to test certain aspects of prospective wireless operations in the 3.5 GHz band

3 EXPLANATION OF THE DEGREE TO WHICH THE INFORMATION IS COMMERCIAL OR FINANCIAL OR CONTAINS A TRADE SECRET OR IS PRIVILEGED:

The information requested to be kept confidential has significant commercial and financial value to Boingo Wireless. The exhibits supporting the STA discuss tests/experiments that include trade secret information. The Commission has clarified that confidential treatment Boingo Wireless Inc

should be afforded to trade secrets. Boingo Wireless's tests and experiments and proprietary wireless applications using particular radio frequency equipment and shared spectrum technology represent "secret commercially valuable plan" within the meaning of a trade secret as recognized by the Commission.

4 EXPLANATION OF THE DEGREE TO WHICH THE INFORMATION CONCERNS A SERVICE THAT IS COMPETITIVE:

Boingo Wireless is planning to test its shared spectrum solutions, and operation of Small Cell in the 3.5 GHz band in <Los Angeles, CA>. The services and shared spectrum technologies that are the subject of this STA have not been fully developed, but are expected to be implemented in hardware, software, and service offerings in the 3.5 GHz band. SAS Administrators, equipment manufacturers, and software developers and network operators will compete vigorously on the basis of their products in this band.

5 EXPLANATION OF HOW DISCLOSURE OF THE INFORMATION COULD RESULT IN SUBSTANTIAL COMPETITIVE HARM

The technology under test is very sensitive and confidential in nature. Disclosure of the redacted information could cause substantial competitive harm to Boingo Wireless, because it would provide competitors insight into confidential development, operational, and strategic information that would not otherwise be available, which would work to Boingo Wireless's competitive disadvantage.

6 IDENTIFICATION OF ANY MEASURES TAKEN BY THE REQUESTING PARTY TO PREVENT UNAUTHORIZED DISCLOSURE.

Boingo Wireless routinely treats the redacted information as highly confidential and exercises significant care to ensure that such information is not disclosed to its competitors or the public. Boingo Wireless has taken steps to keep confidential the information set forth in the confidential exhibits by limiting the number of people involved in the tests/experiments to only those on a "need to know" basis, and by requiring that any third parties involved in the preliminary analysis execute robust nondisclosure agreements.

7 IDENTIFICATION OF WHETHER THE INFORMATION IS AVAILABLE TO THE PUBLIC AND THE EXTENT OF ANY PREVIOUS DISCLOSURES OF THE INFORMATION TO ANY THIRD PARTIES

The information contained in the confidential exhibits is not available to the public, and will only be disclosed to third parties pursuant to the restrictive safeguards described above. Boingo Wireless voluntarily provides the information to the Commission at this time with the expectation that it will be treated confidentially in accordance with the Commission's rules.

8 JUSTIFICATION OF THE REQUESTED PERIOD OF CONFIDENTIALITY

Boingo Wireless requests that the redacted information be treated as confidential on an indefinite basis as it cannot identify a date certain on which this information could be disclosed without causing competitive harm to Boingo Wireless. Shared spectrum is new technology that is being developed. As such Boingo Wireless expects that confidential treatment will be necessary for the length of the proposed experiment and thereafter in order to protect its evolving business and technology strategies.

9 ANY OTHER INFORMATION THAT WOULD BE USEFUL IN ASSESSING WHETHER THIS REQUEST SHOULD BE SUBMITTED

The information subject to this request for confidentiality should not be made available for public disclosure at any time. There is nothing material that public review of this information would add to the Commission's analysis of Boingo Wireless's request for an experimental authorization.

Moreover, public disclosure of the sensitive information in the confidential exhibits to the STA after the Commission has ruled on the Request for Confidentiality is not necessary for the Commission to fulfill its regulatory responsibilities.

Consistent with 47 C.F.R. § 0.459(d)(1), Boingo Wireless requests notification if release of the information subject to this request is requested pursuant to the FOIA or otherwise, so that Federated Wireless may have an opportunity to oppose grant of any such request.

Boingo Wireless STA Exhibit

Respectfully submitted,

Boingo Wireless Inc