

NARRATIVE STATEMENT

By this application, and pursuant to Section 5.3(e), (f), (j) and (k) Section 5.53 of the Federal Communications Commission (“FCC”) Rules, 47 C.F.R. §§ 5.3(e),(f), (j) & (k) and 5.53 (2015), Starry Spectrum LLC (“SLLC”) respectfully seeks modification of the experimental authority granted by the FCC under call sign W12XEB. That license allows SLLC: (a) to evaluate the functionality, reliability and user acceptability of equipment and technologies being designed and developed to support new and innovative point-to-point and point-to-multipoint communications capabilities; and (b) conduct market studies on a limited basis.

Specifically, SLLC seeks modification of its license so that it may conduct similar tests at three additional locations (*i.e.*, in Leesburg, VA; Cleveland, OH; and Indianapolis, IN) and to operate on additional spectrum in the 37-38.2 GHz band allocated for, among other things, point-to-point and point-to-multipoint communications. *See Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report & Order and Further Notice of Proposed Rulemaking, FCC 16-89 (July 14, 2016)(“Spectrum Frontiers Proceeding”).

SLLC understands and acknowledges that any operation under its license modified as requested herein would be subject to same conditions imposed upon its current experimental operations and that the FCC may specify additional conditions it deems appropriate. For example, and as discussed in greater detail below, SLLC will advise participants that: (a) the operations are being conducted under an experimental authority issued to SLLC, (b) the company is responsible for the experimental activities, (c) all operations are being conducted on a non-interference basis, and (d) after the test is completed, SLLC will retrieve and recover all devices that do not comply with FCC regulations.

The following additional information is provided in support of this request:

1) Company Background and Purpose of Operation

Starry Spectrum LLC, headquartered at 745 Atlantic Avenue, Boston, Massachusetts (FRN: 0025185505), designs and develops new and innovative equipment and technologies to meet users’ communications and information needs, such as for fixed and mobile cellular and private mobile radio communications, backhaul and backbone infrastructure, and broadband transmission capabilities.

Under its existing experimental authority, SLLC has evaluated the functionality, reliability and user acceptability of equipment and technologies being designed and developed for operation in microwave bands to support point-to-point and point-to-multipoint communications capabilities. For example, SLLC has tested the technical characteristics of prototype equipment, including the propagation and interference effects related to: (a) weather (*e.g.*, rain, snow); (b) foliage; (c) construction materials (*e.g.*, brick, plaster, wood); (d) reflective and multipath transmissions); and (e) power level. As required by the Special Condition No. 1 of its current license, SLLC will file a

progress report providing additional information regarding its experimental operations after it has completed its first 12 months of tests.

2) Additional Locations and Spectrum Requested

By the instant application for modification, SLLC seeks to enhance its experimentation and trials by conducting tests at three additional locations and on additional spectrum. Specifically, it seeks to conduct tests in Leesburg, Cleveland and Indianapolis on the 38.2-38.6 GHz band currently authorized under its existing experimental license and to conduct tests on additional channels in the 37-38.2 GHz band at all locations. As noted above, SLLC recognizes that the proposed operations would be in spectrum allocated in the *Spectrum Frontiers Proceeding*. SLLC wishes to emphasize, however, that its experimental operations will comply with all requirements adopted by the agency pursuant to that rulemaking that the spectrum may be in use in some areas by other entities or licensees. Accordingly, it will coordinate its experimental tests so as not to operate on channels that are currently assigned to or used by existing or future licensees or entities.

3) Technical Specifications

a. Power Levels and Emissions

- i. Maximum Transmitter Power Output ("TPO"): 12 Watts Mean
- ii. Maximum Effective Radiated Power ("ERP"): 1 kWatt Mean
- iii. Necessary bandwidth: 200 MHz
- iv. Emissions: D7D
- v. Other emission modes may be utilized, but in no event will the emissions extend beyond the frequency bands requested. All power levels will comply with the limits set forth in the FCC's rules, including those relating to human exposure to radiation.

b. Location Information

SLLC seeks authority to conduct its experimental operations at the locations authorized in its current license as well as at three additional locations, in Leesburg, Cleveland and Indianapolis, as listed in Attachment A and in the accompanying FCC Form 442. Specifically, SLLC seeks authority to operate and demonstrate products and services: (i) at its own offices; and (ii) at the premises of entities working under SLLC's authorization to evaluate the devices and related software and services. The company also seeks to continue to conduct limited market studies at the locations requested that will involve the lease, but not the sale, of the test equipment so that the company may evaluate the acceptability of various marketing models and policies. Accordingly, these operations would be consistent with the requirements set forth in Section 2.805 of the Commission's marketing rules and 47 C.F.R. § 2.805 (2015); see also *Revision of Part 2 of the Commission's Rules Relating to the Marketing and Authorization of Radio Frequency Devices*, ET Docket No. 94-45, Report and Order, released Feb. 12, 1997, at 11-13, 19-20 ("Marketing Rule Revisions").

c. Equipment To Be Used

As detailed in its initial application, to obtain valid data and present an accurate demonstration of real-world operations, the company must deploy a sufficient number of units during its tests to simulate actual usage. The type of capabilities SLLC seeks to evaluate would likely be deployed by hundreds of thousands of users. For example, the potential market for the capabilities include the over 350 million consumers that currently subscribe to cellular and cellular like services in the United States.

SLLC expects that it will be able to complete its experimentation at each location with 15 or fewer temporary fixed base stations and 250 temporary fixed end user devices at each location identified in Attachment A. In limited cases, however, SLLC might need up to 30 temporary fixed base stations and 400 temporary fixed end user devices at a location. Nevertheless, 540 temporary base stations and 7,200 temporary fixed end user devices reflect the *maximum* number of unapproved or unlicensed devices that would be in operation at any given time under the requested authorization.

Moreover, after the experimentation and evaluations cease, SLLC would recall and recover all unapproved devices. If any different treatment becomes necessary during the course of its experimentation, SLLC will seek separate and additional authority from the agency.

d. Antenna Information and Station Identification

The base station antennas to be deployed operate directionally with a half power beamwidth of 6 degrees. The end user devices operate directionally with a maximum half power beamwidth of less than 8.5 degrees. Since the antennas can be installed in any direction, however, the application characterizes the antennas as omnidirectional. Moreover, the antennas will not extend more than 6 meters above the ground, man-made structure, antenna structure or building. The antennas will be installed and operated in accordance with all FCC and Federal Aviation Administration ("FAA") rules and regulations.

SLLC does not propose to supply station identification as set forth in Section 5.115 of the Commission's Rules, 47 C.F.R. § 5.115 (2015).

4) Limited Market Studies

As noted above, the FCC granted SLLC authority to conduct limited market studies in connection with its experimentation that involved the lease, but not the sale, of the test equipment. Moreover, to obtain valid data and present an accurate demonstration of real-world operations, SLLC was permitted to deploy the proposed capabilities in a manner that simulates actual usage and, thus, allows the company to evaluate the acceptability of various marketing models and policies. For example, such authority

permits SLLC to determine, among other things, the effect of: (a) demographics (*e.g.*, household size, household income, age and gender, current type of service/provider used); (b) psychographics / behavioral characteristics (*e.g.*, attitudes, values, lifestyles); (c) competition (*e.g.*, the use and availability of fiber, cable and DSL alternatives); (d) adoption dynamics; (e) penetration/growth rate; (f) customer acquisition costs; (g) usage (*e.g.*, during peak and non-peak periods, type and frequency, maximums and minimums, capacity and usage limitations); (h) pricing; and (i) operational performance and reliability (*e.g.*, propagation and interference characteristics).

SLLC respectfully requests that it be granted authority under its modified license to continue to conduct limited market studies as permitted under Section 5.3(k) of the FCC's rules, 47 C.F.R. § 5.3(k) (2015) not only at the additional locations, but also on the additional spectrum at all locations.

5) Protection Against Interference

As noted in its initial application and as repeated in this application, SLLC recognizes that the 37-38.6 GHz band is has been assigned in some areas to other licensees. Accordingly, it will coordinate and cooperate with other current or future licensees and users to ensure against interference. Further, company personnel will monitor the operations of other licensees and users before commencing transmissions to avoid interference to such licensees and users. In the event that SLLC receives a complaint of harmful interference resulting from the operations as proposed, it will take immediate action to address the interference, including if necessary discontinuing its operations. The company has designated Mr. John Westbrook, whose contact information is provided below, to act as the "stop buzzer" for this purpose.

Notwithstanding the precautions it will take, SLLC does not expect harmful interference to occur. First, the proposed operations will be limited in scope. Second, the company will monitor the operations of other users before commencing transmissions to avoid interference. Last, SLLC proposes to select channels that are not currently assigned to other licensees or users or are assigned to licensees that have granted consent to SLLC for the proposed operations.

6) Restrictions on Operation

SLLC recognizes that experimental operations must not cause harmful interference to authorized facilities. It does not anticipate that such interference will occur, but should interference occur, SLLC will immediately take reasonable steps to resolve the interference, including if necessary discontinuing operation.

In addition, SLLC proposes to advise entities using the equipment that permission to operate the equipment has been granted under experimental authority issued to

the company, is strictly temporary and may be canceled at any time. Specifically, SLLC proposes to label any unapproved equipment or associated user information conspicuously as follows:

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Permission to operate this device has been granted under experimental authority issued by the Federal Communications Commission to Starry Spectrum LLC, is strictly temporary, and may be cancelled at any time. Operation is subject to the condition that this device not cause harmful interference.

This device has not been authorized as required by the rules of the Federal Communications Commission. This device is not offered for sale and may not be sold until authorization is obtained. Thus, the user does not hold a property right in the device and is required to return the device to Starry Spectrum LLC upon its request.

Also, as stated in its initial application and as emphasized herein, SLLC will recall and recover all unapproved devices after the experimentation and studies have been completed. If any different treatment becomes necessary during the course of its experimentation, SLLC will seek separate and additional authority from the agency.

7) Public Interest

SLLC submits that issuance of a modification of license as requested is in the public interest, convenience, and necessity. Grant of a license will permit SLLC to enhance and continue its research into the operational and marketing characteristics of innovative equipment and technologies to support important communications capabilities.

8) Contact Information

Company Contact and Stop Buzzer

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ATTACHMENT A – EXISTING AND PROPOSED LOCATIONS

SSLLC seeks modification of its experimental authority to: (a) conduct tests at three additional locations listed in the table below (and within a 40 km radius of the coordinates listed below); and (b) operate on additional spectrum in the 37-38.2 GHz band at all locations listed below on channels that are not currently assigned to, or used by, other licensees or entities or that are assigned to licensees that have granted SSLLC permission for the proposed operation. The company will change to other channels within the band when necessary to avoid interference. It will also monitor the operations of other licensees or users before commencing transmissions to avoid interference.

Test Location	Center Coordinates (NAD83)
CURRENTLY AUTHORIZED LOCATIONS	
Boston	42° 21' 01" N; 71° 03' 25" W
New York City	38° 54' 07" N; 77° 02' 26" W
Washington, DC	38° 54' 17" N; 77° 00' 59" W
Los Angeles	34° 03' 00" N; 118° 15' 00" W
San Francisco	37° 47' 00" N; 122°25' 00" W
Dallas-Ft. Worth	32° 46' 33" N; 96° 47' 48" W
Houston	29° 45' 46" N; 95° 22' 59" W
Philadelphia	39° 57' 00" N; 75° 10' 00" W
Detroit	42° 19' 53" N; 83° 02' 45" W
Atlanta	33° 45' 18" N; 84° 23' 24" W
Miami	25° 46' 31" N; 80° 12' 32" W
Minneapolis-St. Paul	44° 59' 00" N; 93° 16' 00" W
Seattle	47° 36' 35" N; 122° 19' 59" W
Denver	39° 45' 43" N; 104° 52' 52" W
Chicago	41° 50' 13" N; 87° 41' 05" W
NEW LOCATIONS	
Leesburg	39° 04' 56" N; 77° 28' 42" W
Cleveland	41° 21' 04" N; 81° 38' 58" W
Indianapolis	39° 46' 03" N; 86° 09' 29" W