

**Amazon Robotics LLC
Application for Modification of
FCC Experimental License WH2XZJ
OET File No. 0013-EX-CM-2016**

NARRATIVE STATEMENT

Pursuant to Sections 5.3 (e) and (f), Section 5.51 and Section 5.53 of the Federal Communications Commission (“FCC”) rules, 47 C.F.R. §§ 5.3 (e) & (f), 5.51, 5.53 (2015), Amazon Robotics LLC respectfully requests a modification of its experimental license issued under call sign WH2XZJ (with radio station code “XE” *i.e.*, for Experimental Export) to operate in the 433 MHz band at an additional location for the purpose of evaluating the performance and functionality of a prototype proximity sensing system. This system will be deployed only within Amazon fulfillment centers in other countries which specify 433 MHz as an unlicensed band. Specifically, by this modification application, Amazon Robotics seeks to conduct supplemental tests at an affiliated subsidiary’s premises, located at 1800 140th Ave East, Sumner, Washington.

The following provides additional details regarding this request.

A. Purpose of Operation and Need for Experimental License:

Amazon Robotics is designing and developing a proximity sensing system to enhance the safety of the operations at its fulfillment centers. Under its existing experimental license, Amazon Robotics has been evaluating radiolocation technology to be used in the operation of robotics in fulfillment centers outside the United States. The experiments have been conducted at company facilities that have been configured with a 10 meter x 10 meter test floor mock-up of a typical environment inside a fulfillment center, which mainly consists of rack storage units where robotic equipment moves under and among the racks. The tests have involved turning on prototype transmitters and measuring the received signal strengths as the robotic equipment moves around on the test floor. Amazon Robotics has conducted tests of different transmit power levels, transmitter heights, and transmitter orientations.

B. Location of Proposed Operations:

As noted above, by this modification application, Amazon Robotics seeks authority to conduct additional experiments at the facilities of a subsidiary affiliated with Amazon Robotics. The address and coordinates of the additional location are provided below:

<u>Additional Location</u>	<u>Current Location</u>
1800 140th Ave East Sumner, WA 98390	300 Riverpark Drive North Reading, MA 01864
Coordinates (NAD83): 47°14'27"N 122°14'36"W	Coordinates (NAD83): 42°33'19"N 71°07'55"W

C. **Technical Specifications:**

1. Frequencies Desired

Amazon Robotics requests an experimental license to operate on channels within the band 433.050 to 434.790 MHz.

2. Effective Radiated Power

The maximum effective radiated transmit power will be 10 milliwatts. The antenna heights will vary from ground level to a maximum of 6 feet (*i.e.*, the height of an average person).

In addition, Amazon Robotics will evaluate environmental considerations to ensure compliance with Section 1.1307 of the FCC's rules, 47 C.F.R. § 1.1307 (2015).

3. Modulation and Emissions

The primary emission designator for the experimental operations is 200KD7D. Other emission modes may be utilized, but in no event will the emissions extend beyond the frequency band requested.

4. Equipment To Be Used

Equipment Type:	Prototype Equipment
Manufacturer:	Amazon Robotics LLC
No. of Portable Units:	100 at the current location 475 at the proposed, additional location
No. of Receive Units	100 at the current location 475 at the proposed, additional location

5. Antenna Information

As noted above, the antenna heights will vary from ground level to a maximum of 6 feet. If deployed within an existing building, the antennas will not extend more than 6 meters above the building. If an antenna is mounted on an existing structure other than a building, it will be installed in accordance with Federal Aviation Administration ("FAA") and FCC rules and regulations.

D. Restrictions on Operation:

Amazon Robotics does not propose to market, sell, or lease prototype equipment to end users in the United States. As noted above, the company is designing the equipment for its own internal company use outside the United States. Moreover, after the experimentation ceases, it will recover all unauthorized devices.

Amazon Robotics also recognizes that other stations may be licensed on these frequencies and that the proposed experimental operation must not cause harmful interference to authorized facilities. It does not anticipate a problem, but should interference occur, it will immediately take steps to resolve the interference, including if necessary immediate shut down and the discontinuance of operation.

Amazon Robotics will also advise entities involved in the experimentation that permission to operate the equipment has been granted under experimental authority issued to Amazon Robotics, is strictly temporary and may be canceled at any time, and that any unauthorized equipment may not be and may not be, offered for sale or lease, or sold or leased, until authorization is obtained.

E. Public Interest Statement:

Amazon Robotics submits that grant of its application to modify its experimental license as proposed is in the public interest, convenience, and necessity. Such action will permit it to develop innovative equipment that will allow the company to enhance the safety of the operations at its fulfillment centers outside the United States.

F. Contact Information:

For questions about this modification application, please contact:

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In the unlikely event interference concerns should arise in connection with the operations authorized under the requested experimental license, please contact:

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