

## **APPLICATION FOR NEW EXPERIMENTAL LICENSE**

### **Introduction**

Cavnue LLC (“Cavnue”) is a leading innovator and collaborator in the development and implementation of infrastructure-based technologies, including intelligent transportation systems (“ITS”), that will accelerate the full functionality of automated vehicles for roads. These technologies hold great promise to enhance driver and pedestrian safety and to reduce traffic congestion by improving wireless communication between and among vehicles, as well as between vehicles and infrastructure such as traffic lights and advanced traffic control systems.

Pursuant to Sections 5.3(e), (f), (h), and (j) and 5.53 of the FCC’s rules, Cavnue seeks authority to conduct tests in real-world environments to evaluate the performance and functionality of cellular vehicle-to-everything (“C-V2X”) technologies operating in the 5.895-5.925 GHz band. Accordingly, Cavnue respectfully requests a 24-month experimental license beginning on November 1, 2022, to supplement its testing capabilities as discussed in greater detail below.

### **Public Interest Statement**

Issuance of an experimental license as requested will serve the public interest, convenience, and necessity. Grant of an experimental license will permit Cavnue to test and evaluate the real-world performance and reliability of C-V2X technologies that are designed to:

- (1) Enhance driver and pedestrian safety; and
- (2) Reduce traffic congestion by improving wireless communication between and among vehicles, as well as between vehicles and infrastructure (e.g., traffic lights, other traffic control systems).

### **Need for License and Locations of Proposed Operations**

As noted above, Cavnue seeks to conduct research and development tests in real-world environments to evaluate the performance and functionality of C-V2X technologies that will advance driver and pedestrian safety and to reduce traffic congestion. It proposes to operate a limited number of mobile-only on board units (“OBUs”) and temporary fixed roadside units (“RSUs”) at the locations detailed in the application.

In addition, Cavnue proposes to operate a limited number of mobile-only OBUs at various locations in the United States. As the precise locations of such tests are not known at this time, Cavnue respectfully requests authority to conduct experimentation on a limited, mobile basis in the areas specified in this application.

Cavnue clarifies that the OBUs will be traditional mobile stations and the RSUs will be temporary fixed stations. As temporary fixed stations, the RSUs will not move while in operation.

The primary participants in the research will be Cavnue employees or contractors. They will be advised that: (a) the operations are being conducted under an experimental authorization issued to Cavnue; (b) the company is responsible for the experimental activities; and (c) after the tests are completed, Cavnue will retrieve or disable all devices that do not comply with FCC regulations.

### **Technical Specifications**

*Frequencies Desired.* Cavnue proposes to test and evaluate RSU and OBU C-V2X equipment operating in the 5.895-5.925 GHz band.

*Power Levels.* Cavnue proposes to operate with the minimum power level needed to conduct its evaluations. It plans to deploy units that will operate with a nominal Effective Radiated Power (“ERP”) of 0.12 Watts, based on a mean Effective Isotropic Radiated Power (“EIRP”) of 23 dBm, or 0.20 Watts. In no event will Cavnue operate devices that will exceed a mean ERP of 1.21 Watts, based on a mean EIRP of 33 dBm or 2 Watts. All power levels will comply with the limits set forth in the FCC’s rules applicable to C-V2X technologies.

*Modulation and Emissions.* The primary emission designators for the proposed operations are 10M0W7W and 20M0W7W. Other emission modes may be utilized, but in no case will the emissions extend beyond the frequency band requested.

*Equipment to Be Used.* Cavnue proposes to conduct its evaluations deploying both authorized and prototype equipment. The manufacturers and model numbers for the equipment to be deployed have not been determined at this time, but as noted above all equipment will be operated consistent with the technical specifications described in this exhibit. In no event will the number of OBUs deployed under the requested license exceed 100 in the aggregate, either prototype or authorized. The total number of RSUs to be deployed will not exceed 50, either prototype or authorized.

*Antenna Information.* Cavnue may wish to evaluate a variety of antenna orientations and heights. Any antennas will be installed in accordance with Federal Aviation Administration and FCC rules and regulations.

### **Protection Against Harmful Interference**

Harmful interference is unlikely to occur because Cavnue’s tests will be conducted only on a limited basis as described in this application. Specifically, Cavnue does not plan to operate more than 50 RSUs or 100 OBUs under the authority requested in this application. In addition, as noted above, Cavnue proposes to limit the power levels of its operations to the minimum necessary and will not exceed the power levels established under FCC rules.

Multiple other institutions, agencies, municipalities, and governmental transportation departments with licenses are cooperatively experimenting with the same technologies,<sup>1</sup> incurring low probability of harmful interference.

Should Cavnue receive a complaint of harmful interference resulting from its operations, Cavnue will take immediate action to address the harmful interference, including discontinuing operations, if necessary. Cavnue's technical and "stop buzzer" contact is listed below.

**Contact Information**

*FCC Counsel.* For questions about this application, please contact:

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*Technical/Stop Buzzer Contact:*

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<sup>1</sup> See, e.g., Call Sign WM2XNG, ELS File No. 0023-EX-CN-2022 (granting experimental authority to General Motors LLC).