Agendum
Oakland University
Board of Trustees Formal Session
June 27, 2025

VEHICULAR WIRELESS COMMUNICATION TEST SYSTEM (ANTENNA CHAMBER)
A Recommendation

1. **Division and Department:** Academic Affairs, School of Engineering and Computer Science (SECS), Finance and Administration.

2. **Introduction:** This board item is a replacement of the same item that was approved by the OU Board of Trustees at their meeting on June 28, 2024. This item was re-bid due to the receipt of additional federal funding, which allowed more capability to be added to the original equipment bid. As a result, a new vendor was selected. It should also be noted that the OU Board of Trustees approved the $1.3M construction budget for this project, which still satisfied the needs for this equipment. SECS seeks approval for the purchase of a vehicle-level measurement system designed for passive antenna measurements and single-input-single-output (SISO) Over-The-Air (OTA) measurements, including co-existence testing. The total cost of this system is $3,489,890.65, funded through two separate federal awards from the National Institute of Standards and Technology (NIST) within the Department of Commerce.

   Oakland University was awarded:
   - $3,000,000 for the proposal titled *"Oakland University Vehicular Wireless Communications System Testing and Standards Facility"* through funding opportunity number 2023-NIST-RFA-CIPP-01.
   - $3,000,000 for the proposal titled *"Next-Gen Electrification Testing and Standards Facility: From Materials to Vehicles"* through funding opportunity number 2024-NIST-RFA-CIPP-01.

   To cover the purchase, $3,000,000 will be allocated from the 2023-NIST-RFA-CIPP-01 award, and $489,890.65 will come from the 2024-NIST-RFA-CIPP-01 award.

   These proposals were submitted by Dr. Daniel Aloi, serving as Principal Investigator and Co-Principal Investigator, on behalf of the Applied Electromagnetics (EMAG) and Wireless Lab at Oakland University. This state-of-the-art system will enable faculty, students, researchers, and industry professionals to assess wireless communication performance on complex mobile platforms, including automobiles.

   The placement of this equipment at Oakland University will create new research opportunities for students, facilitate collaborations with industry and government partners, and strengthen inter-university partnerships, advancing the university's role as a leader in vehicular wireless communications research and training.

This new facility is a spherical near-field antenna measurement system capable of measuring both on-vehicle antenna and wireless system (antenna plus radio) in the frequency ranges from 600 MHz to 18 GHz for a variety of vehicle platforms. The principal components of this system include: 1) Vehicle Level Radio Frequency Chamber; 2) Position System to gather measurements over a hemi-spherical surface (Fixed arch with multiple probes, turntable, and vehicle lift); 3) Radio Frequency Equipment (vector network analyzers, signal generators, cellular call box, and channel emulators); and 4) Data collection and processing segment that includes a data acquisition system and an analysis workstation to operate the position controllers and radio frequency equipment.

This facility will be housed in the SECS Research and Innovation Center (RIC) located at 2871 Research Drive in Rochester Hills, Michigan.

The total cost for the Vehicular Wireless Communication Test System is estimated to be $4,789,890.65. $3,489,890.65 will be dedicated to the purchase of the turnkey system and is funded from the Federal NIST grants. $1,300,000 will be used for the structural modifications required for the RIC building in order to accept this new facility, which will be funded from existing resources within SECS and an internal loan from the University.

The project timeline is May 2025 – January 2027. A business plan was provided for SECS to repay this loan (including interest) within 10 years from revenue generated from research grants, training, and industry test fees. The estimated construction costs were developed by the office of Capital Planning, Design, and Construction, working with the Smith Group to generate architectural drawings. The construction work for the renovation at 2871 Research Drive will go out for competitive bid.

A competitive bidding process managed by OU's Purchasing Department was conducted. Representatives from SECS and Purchasing were on the selection committee. A total of 3 companies provided bid responses. As a result of the extensive review process, it was determined that Microwave Vision Group's bid provided the best capability for the $3,490,000 available through the two federal awards.

3. **Previous Board Action:** None.

4. **Budget Implications:** $3,489,890.65 contract to Microwave Vision Group to be funded from active Federal NIST grants and approximately $1,300,000 construction costs to be funded from existing resources within SECS and an internal OU loan to be repaid with interest of 4.25% over 10 years or less with incremental revenue earned from the Wireless Communication Test System.

5. **Educational Implications:** The new system to be utilized for research and training, which will create research opportunities for students and enable key partnerships to be made with industry, government entities, and other universities.

6. **Personnel Implications:** None.

7. **University Reviews/Approvals:** This recommendation was formulated by the Director of Research SECS, the Dean of SECS, and reviewed by the Purchasing Department, Office of Legal Affairs, Senior Vice President for Finance and Administration, Executive Vice President for Academic Affairs and Provost, and President.

8. **Recommendation:**

RESOLVED, that the Board of Trustees approves the selection of Microwave Vision Group as the vendor for the Vehicular Wireless Communication Test System; and, be it further

RESOLVED, that the Board of Trustees approves the construction project necessary to fully implement the system within the RIC; and, be it further

RESOLVED, that the Board of Trustees authorizes the President, the Senior Vice President for Finance and Administration, and their respective designees, to perform all acts and deeds and to execute and deliver all contracts, instruments and documents required by this resolution that are necessary, expedient and proper in connection with the work; and, be it further

RESOLVED, that said contracts, instruments, and documents shall be reviewed by and be in a form acceptable to the Vice President for Legal Affairs and General Counsel prior to execution, and be in compliance with the law and with University policies and regulations, and conform to the legal standards of the Vice President for Legal Affairs and General Counsel.

9. **Attachment:** SECS Presentation.

Submitted to the President
on 6/16, 2025 by

Amy Thompson, Ph.D., FESG, CHES
Executive Vice President for Academic
Affairs and Provost

Stephen W. Mackey
Senior Vice President for Finance and
Administration and Treasurer to the Board of Trustees

Recommended on 6/18, 2025
to the Board of Trustees for Approval by

Ora Hirsch Pescovitz, M.D.
President

Reviewed by:

Joshua D. Merchant, Ph.D.
Chief of Staff and
Secretary to the Board of Trustees