



CERTIFICATION TEST REPORT

Report Number. : R12239019-EP4

Applicant : Johnson Controls, Inc.
507 East Michigan Street
Milwaukee, WI 53202, USA

Model : WVS-1000

FCC ID : OEJ-WVS100

IC : 279A-WVS100

EUT Description : Vibration Sensor

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 2
ISED RSS-GEN ISSUE 5

Date of Issue:

2019-07-11

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NVLAP Lab code: 200246-0

REPORT REVISION HISTORY

Ver.	Issue Date	Revisions	Revised By
1	2018-12-19	Initial Issue	Brian T. Kiewra
2	2019-06-26	Corrected IC ID	Lariah Ijames
3	2019-07-11	Updated EUT description	Niklas Haydon

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1. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Drive, Research Triangle Park, North Carolina 27709, USA and 2800 Perimeter Park Dr., Suite B, Morrisville, North Carolina 27560, USA. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

12 Laboratory Dr.		2800 Perimeter Park Dr.	
<input type="checkbox"/>	Chamber A (ISED:2180C-1)	<input checked="" type="checkbox"/>	Chamber North (ISED:2180C-3)
<input type="checkbox"/>	Chamber C (ISED:2180C-2)	<input type="checkbox"/>	Chamber South (ISED:2180C-4)

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0

2. EQUIPMENT UNDER TEST

2.1. EUT DESCRIPTION

The EUT is a device to collect vibration data via vibration sensor and save the captured data to computer or send it to cloud by WiFi or cellphone. BLE connection used to configure device and network.

2.2. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power and PSD as worst-case scenario.

Radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

2.3. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	T470	PF0ZV66P	NA
Vibration Sensor	CTC	ACC199-149	1027	NA

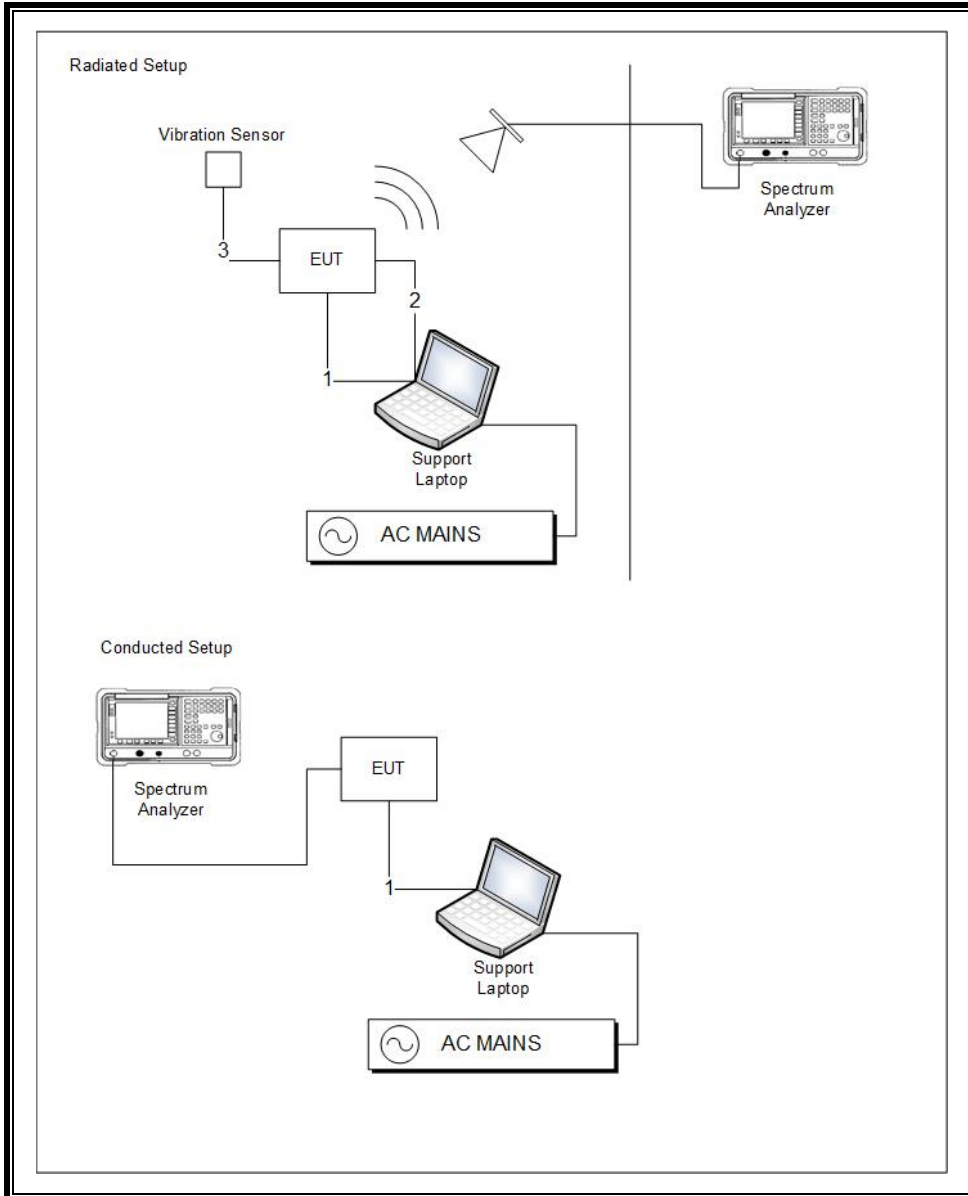
I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB c	USB	<3m	Data and charging
2	Audio	1	3.5mm Audio	Audio	<3m	None
3	Sensor	1	5pin barrel	Proprietary	<3m	Connects to vibration sensor

TEST SETUP

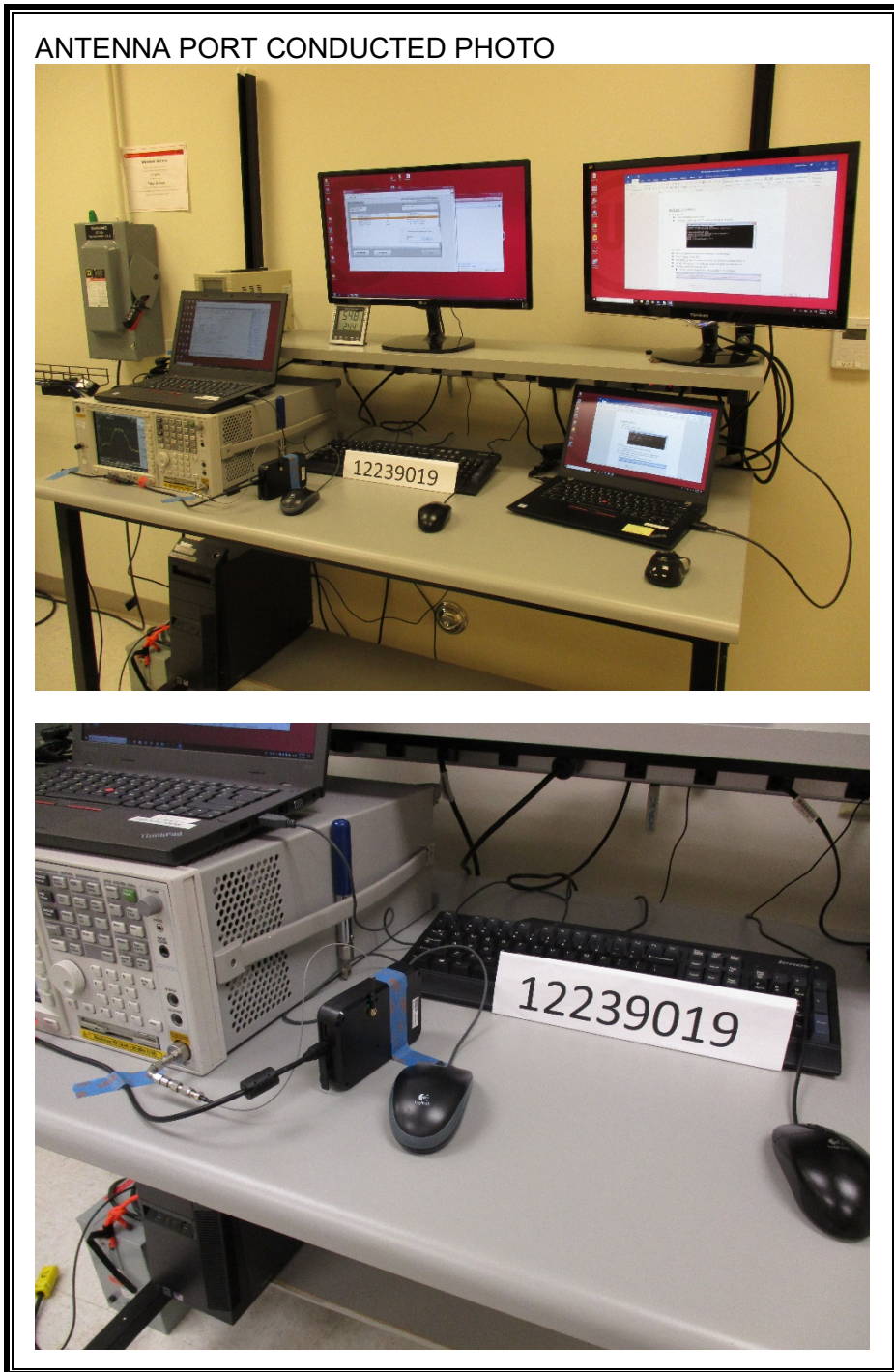
The EUT is connected to a test laptop during the tests. Test software exercised the radio card.

SETUP DIAGRAMS



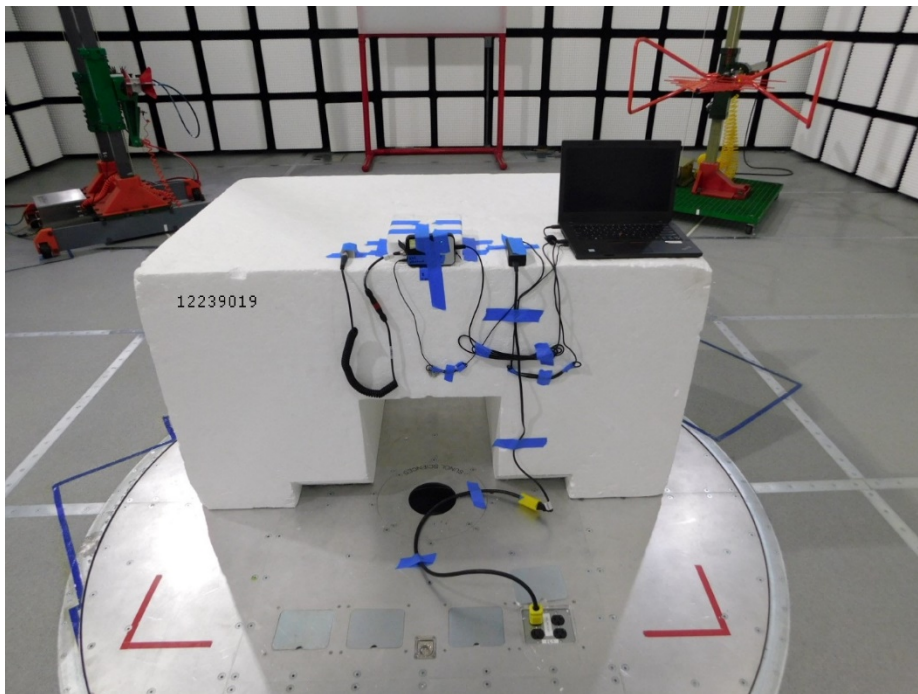
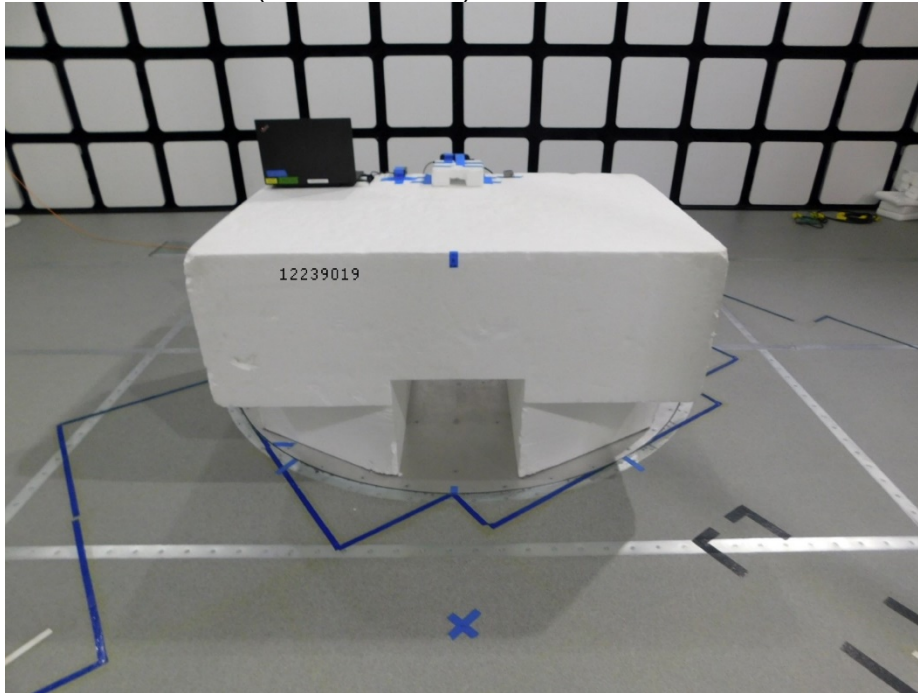
3. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

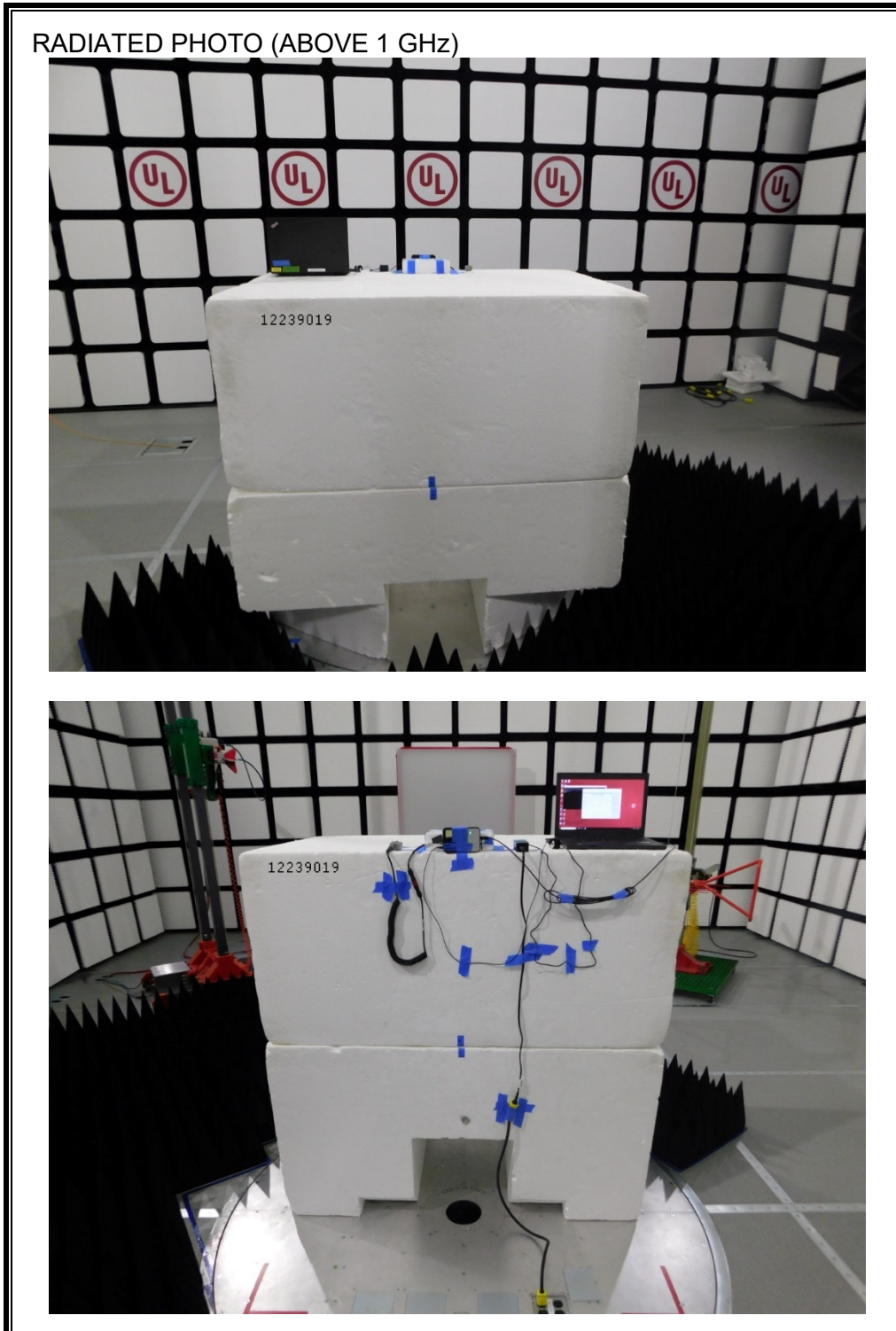


RADIATED RF MEASUREMENT SETUP (BELOW 1 GHz)

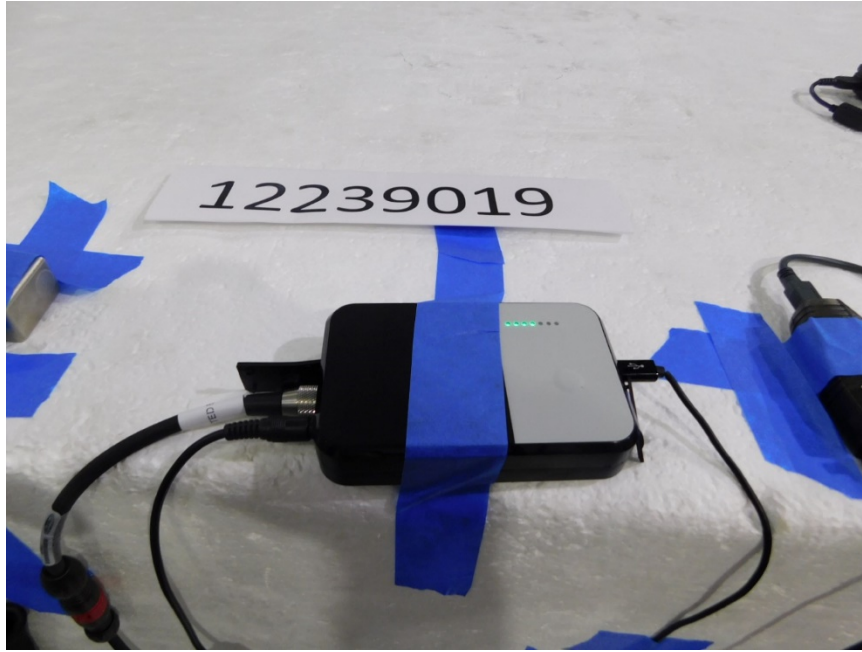
RADIATED PHOTO (BELOW 1 GHz)



RADIATED RF MEASUREMENT SETUP (ABOVE 1 GHz)

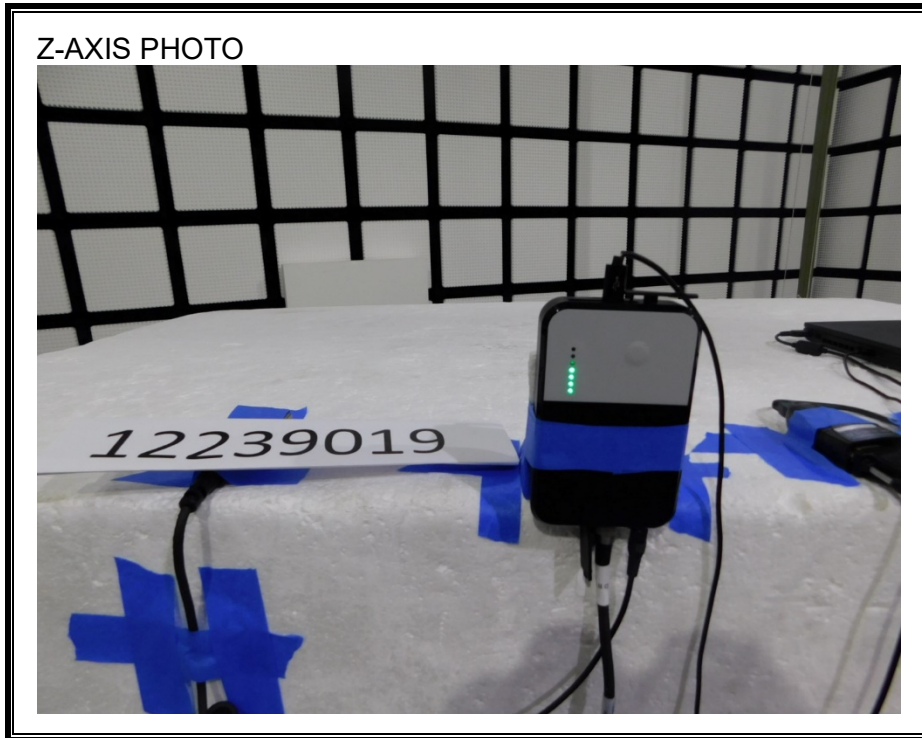


X-AXIS PHOTO

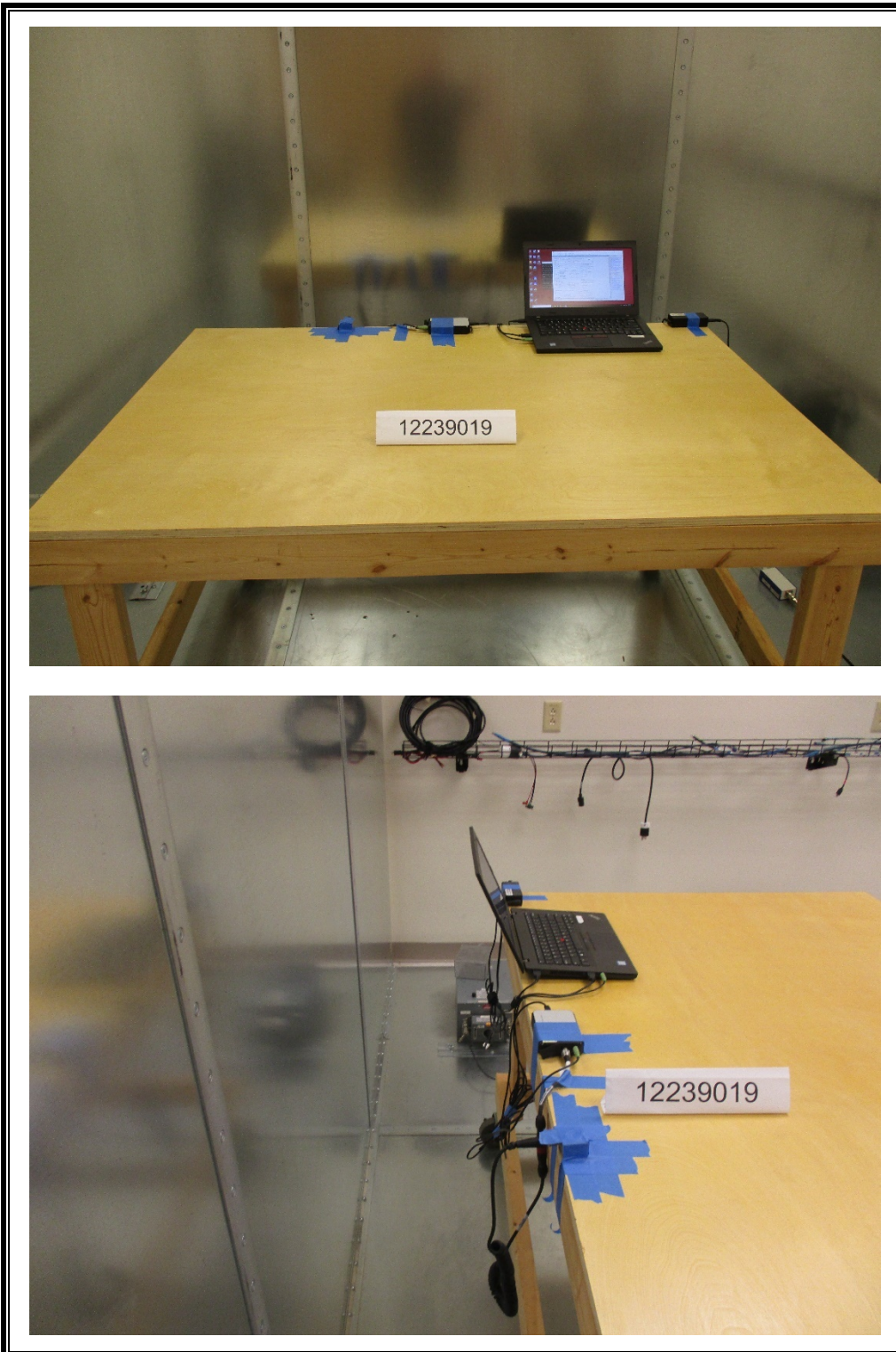


Y-AXIS PHOTO





AC LINE CONDUCTED SETUP



END OF TEST REPORT