

Motor Vehicle Detection System (MVDS) – Site Test

This test will confirm that the MVDS equipment at the site is fully operational, per manufacturer's specifications, prior to network connectivity.

MVDS: Ger	neral Information
Project Number:	Project Name:
Project Stationing:	Date of Test:
Device Name:	Manufacturer:
Serial #:	Model #:
Username (If Required):	Password (If Required):
Communication Method:	IP Address:
Subnet Mask:	Inspector:
MVDS: Gener	al Requirements
Requirement	Pass Fail Notes
Verify location of MVDS installation is as per the p	olans.
MVDS offset from edge of travel lane:	
Latitude:Longitude:	
Verify height of pole and mounting height of MVDS	s 🗆
Verify that NHDOT-approved MVDS hardware is i	nstalled.
MVDS: AC Powe	er – Device Specific
Requirement	Pass Fail Notes
Verify voltage in MVDS load center is within +/- 59 VAC or 240 VAC.	% of 120
Verify that the manufacturer's recommended power/communication cable is being used and is clength.	of adequate

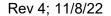
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MVDS: Calibrat	ion	
Requirement	Pass Fail	Notes
Follow the directions on the accom	panying Test sheets	
Complete MVDS Operations Test for Volume.		
Complete MVDS Operations Test for Speed.		
Complete MVDS Operations Test for Classification.		
MVDS: Record Settings /	Configuration	
Requirement	Included	Notes
Sensor ID		
Sensor Serial Number		
Sensor IP Address		
Lane Configuration		
Polling Cycle / Frequency (1 minute)		
Speed to MPH		
Fine Tune / Sensitivity Readings		
Save to File		
Overall MVDS Site Test:		
Inspector Name: Organization:	Signature	:
Witness Name: Organization:	Signature:	
Date:		

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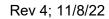


Motor Vehicle Detection System (MVDS) – Communications & Systems Test

This test will confirm that the installed equipment is fully operational utilizing New Hampshire's Advanced Transportation Management System (ATMS) at the NHDOT TMC and Traffic Data Management System (TDMS) at the NHDOT BOT.

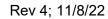
MVDS: Gen	eral Information	
Project Number: Project Stationing: Device Name: Serial #: Username (If Required): Communication Method: Subnet Mask:	Project Name: Date of Test: Manufacturer: Model #: Password (If Required): IP Address: Inspector:	
MVDS: Pr	erequisites*	
Requirement	Pass Fail Notes	
Contractor has coordinated with the TMC and BO established connectivity to the MVDS unit from the BOT.		
Contractor has verified all device components are with supplied IP's, VLANs, configurations, and intercredentials, and has properly labeled all ports in dinterfaces.	rface login	
Contractor must be ready, with all necessary partie preparation, to start the testing at the designated s		

^{*-}Failure to meet any of the prerequisite requirements shall be grounds for immediate testing termination





MVDS: Communications					
Requirement	Pass Fa	ail Notes			
If wireless communications is utilized, document the signal strengthdB					
Verify communications to the MVDS (Ping).					
Verify device status appears on New Hampshire's ATMS and TDMS.					
Generate a manual communications failure at the MVDS cabinet, and verify ATMS, TDMS, and manufacturer software display the error. Verify the MVDS responds after communications have been restored.					
Verify ATMS and TDMS regains communication to the MVDS after power has been disconnected in the field for 2 minutes then restored.					





MVDS: Central Control						
Requirement	Pass	Fail	Notes			
Perform a full diagnostic scan in ATMS, TDMS and manufacturer software and confirm no errors shown.						
Disconnect power to the device and verify a power supply error is displayed in ATMS, TDMS, and/or manufacturer software. Verify the error no longer exists after power is restored.						
Open the cabinet door and verify an intrusion alarm is displayed in ATMS, TDMS, and/or manufacturer software.						
Verify that correct volume data is being communicated to the TMC and BOT from the MVDS. Data must be identical to those collected in the field by the device.						
Verify that correct speeds are being communicated to the TMC and BOT from the MVDS. Data must be identical to those collected in the field by the device.						
Verify that correct occupancies are being communicated to the TMC and BOT from the MVDS. Data must be identical to those collected in the field by the device.						
Verify that correct vehicle class are being communicated to the TMC and BOT from the MVDS. Data must be identical to those collected in the field by the device.						
Log into all site device component web interfaces. Verify no errors reported in the software or in web interfaces. Verify web interfaces display all information needed for remote monitoring of device status. Verify all ports are properly addressed and labeled in interfaces.						
Overall MVDS Systems Test:						
Inspector Name: Organization:		_ Signature: _				
Witness Name: Organization:		Signature:				
Date:						



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MVDS Operations Test - Volume

Site:		
Date:	Time:	

Objective

To verify and demonstrate the functionality and accuracy of volume for the detector locations.

Prerequisites

Detector and cabinet installation must be complete. Lane must be open to traffic. TSMO and/or BOT inspector must be present during testing.

Test Equipment

A stopwatch and traffic count board.

Success Criteria

Volume obtained from each detector for each lane of traffic will be within +/- 10 percent of each sample size. Sample size will be ten minutes, or 50 vehicles, whichever comes first. Traffic will be running at typical free-flowing speed and condition.

Test Instructions

- 1. Record the observed actual hand count volume and detector counts for ten minutes, or 50 vehicles, whichever comes first.
- 2. Record the lane number according to the proximity of the device. Closest lane to the device is lane #1.
- 3. Record the volume of vehicles detected by the sensor over the test period.
- 4. Subtract hand count volume from detector count volume and then divide by the hand count volume. Multiply by 100 to get the percent accuracy.
- 5. Indicate pass if result is +/- 10 percent.
- 6. Adjust sensitivity and repeat if percent accuracy is out of range.



		MV	DS: Volum	e Test Resul	lts			
Lane #	1	2	3	4	5	6	7	8
Test Duration (min:sec)								
Observed Hand Count Volume								
Detector Count Volume (from Laptop)								
% Accuracy = (100 x (detector count – hand count)/(hand count))								
Pass or Fail (Pass if accuracy is < +/- 10%*								
Sensitivity Setting								
*-Or per the manufacturers s	pecifications.	·			·			·

Overall MVDS Volume Test:	☐ Pass ☐ Fail		
Inspector Name:	Organization:	Signature:	
Witness Name:	Organization:	Signature:	
Date:			



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MVDS Operations Test – Speed

Site:			_
Date:			
Objective To verify and demonstrate	the functionality and accuracy	of speed for detector locations.	
Prerequisites Detector and cabinet instal Inspector must be present	•	must be open to traffic. TSMO and/or	· BOT
Test Equipment A calibrated radar gun, a st	topwatch, 2-way radios, and a	aptop.	
 Set the interval on the officers. Record the individual consecutive vehicles is possible, for 16 vehicles. Simultaneously to record the current Determ to the compute the mean (Avolume the Modified needed, if radar gun is the compare the Modified. 	detector unit to 3 minutes. speeds of 16 consecutive is not possible, measure speeds or 3 minute time period, which ding the 16 th vehicle, or completor Mean Speed as indicated erage) speed of the 16 vehicle Radar Gun Mean Speed (= not shooting head-on at vehicle	eting the 3 minute time period, immed at that moment by the Detector unit. s, based on radar gun readings. radar gun mean speed / cosine the es. e Detector Mean Speed. Pass if diffe	ne as liately eta), if
Overall MVDS Speed Test:	□ Pass □ Fail		
Inspector Name:	Organization:	Signature:	_
Witness Name:	Organization:	Signature:	
Date:			

if



		MVDS	S: Speed Te	est Results				
Lane #	1	2	3	4	5	6	7	8
Vehicle 1 Radar Speed (mph)								
Vehicle 2 Radar Speed (mph)								
Vehicle 3 Radar Speed (mph)								
Vehicle 4 Radar Speed (mph)								
Vehicle 5 Radar Speed (mph)								
Vehicle 6 Radar Speed (mph)								
Vehicle 7 Radar Speed (mph)								
Vehicle 8 Radar Speed (mph)								
Vehicle 9 Radar Speed (mph)								
Vehicle 10 Radar Speed (mph)								
Vehicle 11 Radar Speed (mph)								
Vehicle 12 Radar Speed (mph)								
Vehicle 13 Radar Speed (mph)								
Vehicle 14 Radar Speed (mph)								
Vehicle 15 Radar Speed (mph)								
Vehicle 16 Radar Speed (mph)								
Radar Gun Mean Speed (mph)								
Cosine Theta								
Modified Radar Gun Mean Speed (mph)								
Detector Mean Speed (mph)								
% Accuracy = (100 * Radar Mean Speed – Detector Mean Speed) / Radar Mean Speed								
Pass or Fail (Pass if % Accuracy < +/- 10%)								
Sensitivity Setting								
Does Controller Properly Record Occupancy?								



MVDS Operations Test – Classification

Site:	
Date:	Time:

Objective

Verify and demonstrate the functionality and accuracy of vehicle classification for the detector locations.

Prerequisites

Detector and cabinet installation must be complete. Lane must be open to traffic. TSMO and/or BOT Inspector must be present during testing.

Test Equipment

A stopwatch, a traffic count board, and a laptop.

Success Criteria

Classifications obtained from each detector for each lane of traffic will be within +/- 10 percent of each sample size (MVDS Spec 3.7.1). Sample size will be at least three minutes, and include at least 5 vehicles in each classification type (see table below). Traffic will be running at typical free-flowing speed and condition.

Test Instructions

- 1. Record the observed actual hand count classifications and sensor counts for at least three (3) minutes, capturing at least 5 vehicles of each classification type.
- 2. Record the classification of vehicles detected by the sensor over the test period.
- 3. Subtract hand count classification counts from detector count volume and then divide by the hand count classification count. Multiply by 100 to get the percent accuracy.
- 4. Indicate pass if result is +/- 10%.
- 5. Adjust sensitivity and repeat if % accuracy is out of range.

Classification Measurements				
# of Axles	Vehicle Length (Approximate)			
2	20 Feet			
3	30 – 40 Feet			
> 3	> 50 Ft			

Use the chart above to determine the number of axles by vehicle length. Use the chart on the next page to complete the test for each travel lane.



MVDS: Classification Test Results									
Lane #		1	2	3	4	5	6	7	8
Time (min:sec)									
Observed Classification Counts	2 Axle								
	3 Axle								
	> 3 Axle								
Classification (From Laptop)	2 Axle								
	3 Axle								
	> 3 Axle								
% Accuracy = (laptop - observed) / (observed)	2 Axle								
	3 Axle								
	> 3 Axle								
Pass/Fail	Pass if all < +/- 10%								
Sensitivity Setting									

Overall MVDS Classification Test	: ☐ Pass ☐ Fail	
Inspector Name:	_ Organization:	_ Signature:
Witness Name:	Organization:	Signature:
Date:		