# Variable Speed Limit Sign (VSLS) – Site Test

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

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| **VSLS: General 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: | | |  | | | | |

## VSLS: General

| **VSLS: General Requirements** | | |
| --- | --- | --- |
| **Requirement** | **Pass Fail** | **Notes** |
| Verify location of VSLS installation is as per the plans.  VSLS offset from edge of travel lane: \_\_\_\_\_\_\_\_\_\_\_  Latitude:\_\_\_\_\_\_\_\_\_\_\_\_\_ Longitude:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  |
| Verify that VSLS installation satisfies the minimum vertical clearance from the edge of pavement to the lowest point of VSLS. |  |  |

## VSLS: Sign Cabinet

| **VSLS: Sign Housing** | | |
| --- | --- | --- |
| **Requirement** | **Pass Fail** | **Notes** |
| Verify the exhaust fan is the ball-bearing type and mounted to the rear sign housing wall. |  |  |
| Verify one filtered air intake port is provided in each sign housing. |  |  |
| Verify a thermostat used to activate the ventilation system is located near the top of the sign interior. |  |  |
| Verify fan and thermostat function properly using a heat gun or adjusting the temperature to turn the fan on or off.  Reset the thermostat to manufacturer’s recommended setting. |  |  |

## VSLS: Electrical

| **VSLS: AC Power – Device Specific** | | |
| --- | --- | --- |
| **Requirement** | **Pass Fail** | **Notes** |
| Verify voltage in sign load center is within +/- 5% of 120/240 VAC. |  |  |
| Verify that the manufacturer’s recommended power/communication cable is being used and is of adequate length. |  |  |
| Verify power supply has AC to DC converter mounted to DIN rail and measure output voltage of power supply. |  |  |
| For documentation purposes, record the wattage when the following circuits are operational and fully loaded :   * LED display pixel matrix, with 100% of the pixels operating at their maximum possible drive current. * VSLS environmental cooling system. * Sign Controller. * Device server (if included). * Media converter (if included). | *Not a pass / fail test* | Record wattage: |
| For documentation purposes, record the wattage when the following circuits are operational and fully loaded:   * LED display pixel matrix, with 70% of the pixels operating at their maximum possible drive current. * Sign controller. | *Not a pass / fail test* | Record wattage: |

## VSLS: Operations

| **VSLS: Operations** | | |
| --- | --- | --- |
| **Requirement** | **Pass Fail** | **Notes** |
| Verify the VSLS can be powered on/off. |  |  |
| Verify that controller can be connected to laptop and vendor software can access the VSLS. |  |  |
| Verify that controller correctly identifies the address of the controller, its ID, current time, and date. |  |  |
| Verify proper VSLS message color (white legend on black background). |  |  |
| Verify all LEDs can display red, green, blue colors in a test message. |  |  |
| Verify operation of every pixel, including uniform brightness at all brightness levels and proper electrical current consumption. (There shall be zero (0) pixel outages.) |  |  |
| Verify that display modules are properly wired by displaying a text message that identifies the module’s correct row and column position. |  |  |
| Verify proper installation and aiming of display modules. |  |  |
| Verify proper display of all test messages, and patterns in controller memory. |  |  |
| Verify that a new message can be created, stored in memory, and recalled for display. |  |  |
| Verify that the VSLS can be blanked out. |  |  |
| Verify that brightness can be manually adjusted from controller. |  |  |
| Verify that brightness can be set to “Auto” in controller and test operation of photo sensor(s). |  |  |
| Verify proper display of numerical test messages (5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, and 70) in controller memory. |  |  |
| Verify correct wiring of alarms and sensors to the controller’s input. |  |  |
| Verify that all diagnostic routines can be successfully performed. |  |  |
| Verify operation of sign monitoring through the controller. |  |  |
| Verify operation of the flashing beacon through the controller independently from the speed limit display panels. (VSLS Spec 2.15.3) |  |  |

Overall VSLS Site Test: 🞏 Pass 🞏 Fail

Inspector Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Organization: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_

Witness Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Organization: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Variable Speed Limit Sign (VSLS) – Communications & Systems Test

This test will confirm that the equipment at the site is fully operational utilizing New Hampshire’s Advanced Transportation Management System (ATMS) at the NHDOT TMC.

## VSLS: General Information

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| **VSLS: General 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: | | |  | | | | |

## VSLS: Prerequisites

| **VSLS: Prerequisites\*** | | |
| --- | --- | --- |
| **Requirement** | **Pass Fail** | **Notes** |
| Contractor has coordinated with the TMC, and has established connectivity to the VSLS from the TMC. |  |  |
| Contractor has verified all device components are configured with supplied IP's, VLANs, configurations, and interface login credentials, and has properly labeled all ports in device web interfaces. |  |  |
| Contractor must be ready, with all necessary parties and preparation, to start the testing at the designated start time. |  |  |

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

## VSLS: Communications

| **VSLS: Communications** | | |
| --- | --- | --- |
| **Requirement** | **Pass Fail** | **Notes** |
| If wireless communications is utilized, document the signal strength. \_\_\_\_\_\_\_\_\_\_\_\_dB |  |  |
| Verify communications to the sign (Ping). |  |  |
| Verify device status appears on New Hampshire’s ATMS. |  |  |
| Generate a manual communications failure at the VSLS cabinet, and verify both ATMS and manufacturer software display the error. Verify the VSLS responds after communications have been restored. |  |  |
| Verify ATMS regains communication to the VSLS after power has been disconnected in the field for 2 minutes then restored. |  |  |

## VSLS: Central Control

| **VSLS: Central Control** | | |
| --- | --- | --- |
| **Requirement** | **Pass Fail** | **Notes** |
| Perform a full diagnostic scan in ATMS and manufacturer software, and confirm no errors shown. |  |  |
| Disconnect power to the device, and verify a power supply error is displayed in ATMS and/or manufacturer software. Verify the error no longer exists after power is restored. |  |  |
| Disconnect a pixel module and verify a pixel error is displayed in ATMS and/or manufacturer software. |  |  |
| Disconnect the photocell and verify a photocell error is displayed in ATMS and/or manufacturer software. |  |  |
| Open the cabinet door and verify an intrusion alarm is displayed in ATMS and/or manufacturer software. |  |  |
| Send a test message to the VSLS. Once properly displayed, terminate the message. |  |  |
| Send a scheduled test message to the VSLS. Once properly displayed, terminate the message. |  |  |
| Set the controller to the local setting. Send a test message from ATMS to the VSLS. Verify that the message does not display. |  |  |
| 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 VSLS System Test: 🞏 Pass 🞏 Fail

Inspector Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Organization: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_

Witness Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Organization: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_