CERTIFICATE CONCERNING DESIGN AND CONSTRUCTION OF ELECTRONIC SPEED MEASURING DEVICES

I, Nathan Dumler, do certify under penalty of the laws of the State of Washington that the following is true and correct:

I have been employed as a technician by American Traffic Solutions for 3 years. I became a speed validation technician in 2018 and have over 1000 hours performing speed validation tests. I am nationally certified as a RADAR and LIDAR operator. The City of Kirkland currently uses the AutoPatrol™ 3D radar fixed speed safety camera system, an electronic speed measuring device provided through a contract with American Traffic Solutions, Inc. ("ATS"). Part of my duties include monitoring regular testing of the AutoPatrol 3D radar fixed speed safety camera systems used by the City of Kirkland.

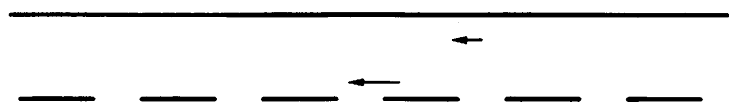
ATS contracted with the City of Kirkland to provide an Automated Speed Enforcement ("ASE") system designed to record the speed of a vehicle and obtain photographs or other recorded images of the vehicle and the vehicle's registration plate while the vehicle is traveling in excess of speed limits in certain safety zones within posted limits.

The ASE program includes the use of the AutoPatrol 3D radar fixed speed safety camera systems at the following locations within the City of Kirkland:

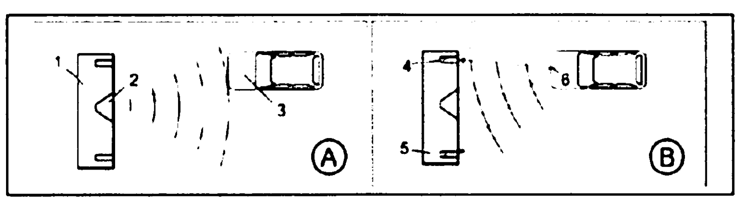
| **Location Code** | **Location Description** | **Lanes Monitored** |
|---|---|---|
| KRKF001 | NB 132nd Ave NE @ Muir Elementary/Kamiakin Middle | 1 |
| KRKF002 | SB 132nd Ave NE @ Muir Elementary/Kamiakin Middle | 1 |
| KRKF003 | EB 80th St @ Rose Hill Elementary | 1 |
| KRKF004 | WB 80th St @ Rose Hill Elementary | 1 |

The AutoPatrol 3D radar fixed speed safety camera system operates by measuring vehicle speed, as well as position relative to the radar to calculate and differentiate multiple vehicles in the radar beam. The speed of a moving vehicle is measured by Doppler radar. Doppler radar is a generally accepted technology used for measuring speed. The AutoPatrol 3D radar technology is used throughout the US and Europe as well as other countries and is approved by the Swiss national metrology institute- METAS.

The AutoPatrol 3D radar fixed speed safety camera system uses a tracking radar sensor for measuring vehicle speeds and detecting speed violations. The AutoPatrol 3D radar is aligned at a fixed angle across the road. The AutoPatrol 3D radar emits a horizontal beam over the road surface as represented by the illustration below. The tracking radar can simultaneously detect multiple vehicles and measure their speed, distance, angle and movement within the radar beam. The radar tracks multiple vehicles by reconstructing vehicle movement from the measured object speed, angle and distance values. If a vehicle passes a defined trigger line, the radar outputs the vehicle's speed and lane information. The camera connected to the tracking radar uses this information to determine if there is a speed violation and to capture photographs showing the measured speed and lane on the databar of the captured images.



The tracking radar utilizes the Doppler Effect for speed determination. If an electromagnetic wave is emitted at a moving object, then the wave is reflected back from the moving object. The frequency of the wave received back by the radar shifts based on the speed of the moving object and its direction of travel. The tracking radar continuously determines this frequency shift of each object to calculate the object's speed. The tracking radar consists of two receiving antennas integrated into a single radar sensor. This configuration allows the radar to measure the distance and angle of the vehicle relative to the position of the radar sensor. Illustration A and B show the measurement principle in simplified form. The radar sensor emits a radar beam (illustration A). The radar beam is reflected by the vehicle (illustration B). The two receivers receive the reflected radar beam. The radar sensor evaluates the return frequency, as well as the phase difference of the reflected radar beam from both of the receivers. With the aid of these values the radar sensor calculates the vehicle position.




| | |
|---|---|
| 1 Radar sensor | 4 Receiver A |
| 2 Transmitter | 5 Receiver B |
| 3 Detected vehicle | 6 Reflected signal |

Prior to operation each day, the system performs a system self-test. This self-test performs an electronic tuning fork test to produce a specific frequency and returns an associated speed value. Only if the return value meets the acceptance criteria to show that the system is operating correctly will the system enter measure mode. Unless a self-test is successful, the system will not enter measure mode and no violations will be captured. Additional information stored as metadata within each image includes coordinates of the vehicle position at the time of capture. This information is extracted and utilized through a secondary speed verification process to provide yet another means to validate offender speed and position based on the two images obtained and image analytics. In addition to the internal system checks and the manufacturer calibration certification, the 3D radar system is subject to routine and independent calibration check of the speeds produced by the system at least annually by a qualified technician.

Each day the computer which controls the fixed speed safety camera system is rebooted. The reboot is initiated each day and each time the computer is rebooted an internal check is performed on all operations of each fixed speed safety camera system, including the clocks, sensors, camera and speed calculating hardware and software, in order to verify that all operations are functioning correctly. When the internal check detects a problem with one of the operations on a given fixed speed safety camera system, then that particular fixed speed safety camera system is inactivated and a request for service is relayed to ATS support personnel. This means that violations cannot be issued until any internal problem is fixed.

Speed validation tests are regularly performed on each installed and operable AutoPatrol 3D radar fixed speed safety camera system. The test is conducted by having a LIDAR Operator obtain true measurements of up to five vehicles per lane in the ascending and/or descending direction. The speed of the vehicle is captured by the LIDAR Operator and then relayed via cellular to an ATS Technician. The ATS Technician then compares the vehicle speed measured by the AutoPatrol 3D radar fixed speed safety camera system to the speed measured by the LIDAR Operator to ensure the accuracy of the AutoPatrol 3D radar fixed speed safety camera system. ATS maintains the results of each test in a Validation Report. The speed validation for each system was performed on the following date and the systems at each location were found to be in proper working order:

| Location Code | Location Description | Date of Test |
|---|---|---|
| KRKF001 | NB 132nd Ave NE @ Muir Elementary/Kamiakin Middle | 12/22/2022 |
| KRKF002 | SB 132nd Ave NE @ Muir Elementary/Kamiakin Middle | 12/22/2022 |
| KRKF003 | EB 80th St @ Rose Hill Elementary | 12/22/2022 |
| KRKF004 | WB 80th St @ Rose Hill Elementary | 12/22/2022 |

Preventative maintenance, including visual inspections, is regularly performed on the AutoPatrol 3D radar fixed speed safety camera systems. Preventative maintenance activities include: cleaning of the cameras and housing, general site inspection of environment and road conditions, inspection of poles, bases and enclosures, and inspection of system cables and connections. The location and date that preventative maintenance is performed is recorded in the Preventative Maintenance Log, which along with the Validation Report(s) referenced above, is attached hereto.

I am a custodian, or otherwise qualified witness, as to the attached records. I make this declaration based on personal knowledge, and if called and sworn as a witness, I could and would testify as set forth in the following paragraph.

Attached as Exhibits are: Exhibit A - Speed Validation Reports, Exhibit B - Preventative Maintenance Logs, and Exhibit C - Annual System Verification Certificate for all AutoPatrol 3D radar fixed speed safety camera systems installed and used by the City of Kirkland. All documents and materials included as Exhibit A, Exhibit B and Exhibit C are authentic and are what they purport to be, and accurately describe the matters set forth therein. All such records are business records in that they are: (1) records kept in the ordinary course of business; (2) created at or near the time of the transactions or events reflected therein by, or based on information from, a person with knowledge of the transaction or events; and (3) kept as part of a regular business activity.

Based upon my education, training, experience, and knowledge of the AutoPatrol 3D radar fixed speed safety camera system, it is my opinion that the system is so designed and constructed as to accurately employ measurement techniques based on a division of distance over time in such a manner that it will give accurate measurements of the speed of motor vehicles.

I, Nathan Dumler, certify (or declare) under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

Dated this 10th day of January . 2022 in Mesa, AZ

Nathan Dumler

Nathan Dumler, Speed Validation Technician

American Traffic Solutions

# Speed Validation Report
## Client: Kirkland, WA



**Validation Date December 22nd, 2022**

- KRKF001 - NB 132nd Ave NE @ Muir Elementary/Kamiakin Middle
  - Radar Serial Number: 590-112/63008
- KRKF002 – SB 132nd Ave NE @ Muir Elementary/Kamiakin Middle
  - Radar Serial Number: 590-112/64016
- KRKF003 – EB 80th St @ Rose Hill Elementary
  - Radar Serial Number: 590-112/63652
- KRKF004 – WB 80th St @ Rose Hill Elementary
  - Radar Serial Number: 590-112/65047

**Equipment:**
Pro-Lite Plus Hand held Lidar Serial Number: LP05509
Certification Date: February 11th, 2022
Lidar Operator: Charles Goodrich
RLC Operator: Christopher Silva

A speed validation test was conducted for the sites listed above. The Lidar Operator, obtained true measurements of five vehicles per lane in the ascending and/or descending direction. Those speeds were obtained using a Kustom Signals Pro-Lite+ hand held Lidar instrument. The speed of the vehicle is captured by the Lidar Operator and then relayed via cellular to the RLC Technician. The RLC Technician is monitoring the vehicle speed at the Fixed Speed Camera system simultaneously to ensure the accuracy of the system. The speed validation tests performed on the above-listed dates confirmed the accuracy of the Fixed Speed Camera systems at each location.

I, Nathan Dumler, certify that the information contained in this report is true and accurate.

Nathan Dumler

Date: January 10th, 2022
Mesa, Arizona
American Traffic Solutions
Speed Integrity Team

# Certificate of Achievement

*Speed Integrity Technician*

Has successfully completed the 16 hour course for
Speed Integrity Technician

This course encompasses all the necessary tasks required to perform the duties as a Speed Integrity Technician. Through this course each participant is required to display the proper competency through written and practical examinations. In addition, this course certifies each participants as a Lidar operator.

**Presented to:** *Charles Goodrich*

**This Day:** March 29, 2016

Matthew Gioia
Police Traffic Laser/Radar Instructor

American Traffic Solutions™



# Certificate of Achievement

*Speed Integrity Technician*

Has successfully completed the course for Speed Inegrity Technician

This course encompasses all the necessary tasks required to perform the duties as a Speed Integrity Technician. Through this course each participant is required to display the proper competencies in Radar and Laser Technology. In addition, this course certifies each participants as a Lidar operator.

**Presented to:** *Christopher Silva*

**This Day:** May 23rd, 2022

Tylor Yochim
Radar Instructor

American Traffic Solutions™

# SOUTHERN CALIFORNIA RADAR/LASER CERTIFICATION LABORATORY

P.O. Box 2397
Borrego Springs, CA 92004
619-922-3504

I certify that the Kustom Pro-Lite+, Serial Number LP05509 was tested on February 11, 2022, and was calibrated to be within the Manufacturers specifications for accuracy.

- This unit meets or exceeds the NHTSA standards for accuracy.
- This unit is on the IACP Conforming Product List.
- This units tests meet the standard set forth in cvc 40802().

**Test Results**

| Test | Min | Max | Read | Pass |
|---|---|---|---|---|
| Visual/Function | - | - | Inspect | Yes |
| Range @ 100 ft. | -.5 | +.5 | 100.0 | Yes |
| Beam Width | - | .003 | .0013 | Yes |
| Acquisition Time @ 60MPH | - | .3Sec | .18Sec | Yes |
| 35MPH | -2 MPH | +1MPH | 35MPH | Yes |
| 50MPH | -2 MPH | +1MPH | 50MPH | Yes |
| 65MPH | -2 MPH | +1MPH | 65MPH | Yes |
| Pulse Width | - | <100nS | 22.4nS | Yes |
| PRF | 200 | 200 | 200 | Yes |
| Sight Accuracy | N/A | -.003 | .001 | Yes |
| Oscillator Frequency | 19.9980 MHz | 20.0020 MHz | 19.999 MHz | Yes |
| Beam Power Total/7mm | - | 175uW 26uW | 152 uW 15.5uW | Yes Yes |

[illegible]

The Original of this document has an embossed seal over the signature

I certify (or declare) under the penalty of perjury under the laws of the state of California that the foregoing is true and correct.

By: ____________________ Date: February 11, 2022
William F. Dunable, MS/CIS, FCC Lic. # PG-11SD-2354

## SELF-ACCURACY TEST
## Kustom Signals Pro-Lite+ Lidar Speed Measurement Tool

**DATE: ___________12/22/2022_____________**

**Start of shift "Self Diagnostic test" time: ______10:30 AM______**

**Start of shift Distance check: _______100'___________lidar**

**End of shift "Self Diagnostic test" time: _____11:30 AM______**

**End of shift Distance check: _________100'______________**

**City and State: ___Kirkland, WA_____**

**Lidar Serial Number: ____________LP05509____________**

**Certification Date: _____February 11, 2022_______**

**OPERATOR: _______Charles Goodrich__________**

**I, *Charles Goodrich*, certify that the Kustom Signals Pro-Lite+ Lidar speed measurement device was setup, tested, and operated in accordance with the manufactures specifications to include its self-diagnostic check.**

**Further, I certified that the self-check distance was completed and accurate.**

**Signature:**
**Date: 12/22/2022**

American Traffic Solutions™

## Speed Validation Worksheet

| | |
|---|---|
| Date | 12/22/2022 |
| Time | 10:46 AM |
| Site ID | KRKF001 |
| Location | Kirkland, Washington |
| Address | NB 132nd Ave NE @ Muir Elementary/Kamiakin Middle |
| Posted Speed Limit | 20MPH |
| Trigger Speed Limit | 26MPH |
| Speed Type | School |
| Lidar Technician | Charles Goodrich |
| AutoPatrol Technician | Christopher Silva |
| Lidar Serial Number | LP05509 |
| Radar Serial Number | 590-113/63008 |
| Detection Type | Autopatrol-Radar |
| Measure Mode Capture | Yes |
| Photo enforcement signs present | Yes |
| Pass/ Fail | Pass |
| Ascending or Descending | Descending |

| City Lane | Times | Lidar Speeds | AP Speeds | Delta | Comments |
|---|---|---|---|---|---|
| 1 | 10.46.04 | 33 | 32 | -1 | |
| 1 | 10.46.41 | 23 | 23 | 0 | |
| 1 | 10.48.14 | 27 | 28 | 1 | |
| 1 | 10.48.59 | 13 | 14 | 1 | |
| 1 | 10.50.22 | 29 | 30 | 1 | |

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## Speed Validation Worksheet

| | |
|---|---|
| Date | 12/22/2022 |
| Time | 10:42 AM |
| Site ID | KRKF002 |
| Location | Kirkland, WA |
| Address | SB 132nd Ave NE @ Muir Elementary/Kamiakin Middle |
| Posted Speed Limit | 20MPH |
| Trigger Speed Limit | 26MPH |
| Speed Type | School |
| Lidar Technician | Charles Goodrich |
| AutoPatrol Technician | Christopher Silva |
| Lidar Serial Number | LP05509 |
| Radar Serial Number | 590-113/64016 |
| Detection Type | Autopatrol-Radar |
| Measure Mode Capture | Yes |
| Photo enforcement signs present | Yes |
| Pass/ Fail | Pass |
| Ascending or Descending | Descending |

| City Lane | Times | Lidar Speeds | AP Speeds | Delta | Comments |
|---|---|---|---|---|---|
| 1 | 10.42.32 | 29 | 30 | 1 | |
| 1 | 10.42.46 | 28 | 29 | 1 | |
| 1 | 10.43.58 | 19 | 19 | 0 | |
| 1 | 10.44.35 | 18 | 18 | 0 | |
| 1 | 10.44.53 | 23 | 23 | 0 | |

American Traffic Solutions™

## Speed Validation Worksheet

| | |
|---|---|
| Date | 12/22/2022 |
| Time | 11:07 AM |
| Site ID | KRKF003 |
| Location | Kirkland, Washington |
| Address | EB 80th St @ Rose Hill Elementary |
| Posted Speed Limit | 20MPH |
| Trigger Speed Limit | 26MPH |
| Speed Type | School |
| Lidar Technician | Charles Goodrich |
| AutoPatrol Technician | Christopher Silva |
| Lidar Serial Number | LP05509 |
| Radar Serial Number | 590-113/63652 |
| Detection Type | Autopatrol-Radar |
| Measure Mode Capture | Yes |
| Photo enforcement signs present | Yes |
| Pass/ Fail | Pass |
| Ascending or Descending | Descending |

| City Lane | Times | Lidar Speeds | AP Speeds | Delta | Comments |
|---|---|---|---|---|---|
| 1 | 11.07.04 | 20 | 19 | -1 | |
| 1 | 11.07.08 | 20 | 20 | 0 | |
| 1 | 11.07.52 | 33 | 33 | 0 | |
| 1 | 11.09.33 | 29 | 29 | 0 | |
| 1 | 11.11.05 | 27 | 26 | -1 | |

American Traffic Solutions™

## Speed Validation Worksheet

| | |
|---|---|
| Date | 12/22/2022 |
| Time | 11:00 AM |
| Site ID | KRKF004 |
| Location | Kirkland, Washington |
| Address | WB 80th St @ Rose Hill Elementary |
| Posted Speed Limit | 20MPH |
| Trigger Speed Limit | 26MPH |
| Speed Type | School |
| Lidar Technician | Charles Goodrich |
| AutoPatrol Technician | Christopher Silva |
| Lidar Serial Number | LP05509 |
| Radar Serial Number | 590-113/65047 |
| Detection Type | Autopatrol-Radar |
| Measure Mode Capture | Yes |
| Photo enforcement signs present | Yes |
| Pass/ Fail | Pass |
| Ascending or Descending | Descending |

| City Lane | Times | Lidar Speeds | AP Speeds | Delta | Comments |
|---|---|---|---|---|---|
| 1 | 11.00.59 | 23 | 23 | 0 | |
| 1 | 11.02.34 | 26 | 26 | 0 | |
| 1 | 11.03.09 | 23 | 23 | 0 | |
| 1 | 11.04.10 | 18 | 18 | 0 | |
| 1 | 11.05.34 | 21 | 21 | 0 | |

# System Verification
# Test Report

**Prepared for: American Traffic Solutions**

**Model: RRS24F-ST3 (-40 to +70)**

**Serial Number: 590-113 / 63652**

**Description: Radar Beam Characteristics**

**To**

**Jenoptik Multi-Radar System Verification Procedure Base Frequency Test**

**Date of Issue: 7-20-22**

**On the behalf of the applicant:**

**American Traffic Solutions**
**1150 N Alma School Rd**
**Mesa, AZ 85201**

**Prepared by**
**Compliance Testing, LLC**
**1724 S. Nevada Way**
**Mesa, Arizona 85204**
**(480) 926-3100 phone / (480) 926-3598 fax**
**www.compliancetesting.com**
**Project No: p2270012**

Afzal Fazal

Afzal Fazal
**Project Test Engineer**

**Test Results Summary Table**

**The frequency measurements performed by Compliance Testing, LLC and reported within this report demonstrate that the Jenoptik RRS24F-ST3 radar system has an accuracy of less than or equal to 0.62 mph in the range 6.21 mph to 62.14 mph and an accuracy of 0.62 mph to 1.86 mph in the range of 62.14 mph to 186.41 mph. This is equal to or better than +/- 1 mph accuracy up to 100 mph.**

**Test Frequency Set 1**

| Nominal Frequency (GHz) | Measured Frequency (GHz) | Amplitude (dBm) | Frequency Deviation (MHz) | Limit (MHz) | Results |
|---|---|---|---|---|---|
| $F_0$ = 24.0800 | 24.07880 | 8.9580 | 1.19 +/- 0.03 | +/- 48.2 | PASS |
| $F_1$ = 24.0872 | 24.08605 | 9.3370 | 1.20 +/- 0.03 | +/- 48.2 | PASS |
| $F_2$ = 24.0890 | 24.08780 | 10.425 | 1.19 +/- 0.03 | +/- 48.2 | PASS |
| $F_3$ = 24.0900 | 24.08875 | 10.812 | 1.24 +/- 0.03 | +/- 48.2 | PASS |

**Test Frequency Set 2**

| Nominal Frequency (GHz) | Measured Frequency (GHz) | Amplitude (dBm) | Frequency Deviation (MHz) | Limit (MHz) | Results |
|---|---|---|---|---|---|
| $F_0$ = 24.1200 | 24.11835 | 9.2290 | 1.65 +/- 0.03 | +/- 48.2 | PASS |
| $F_1$ = 24.1272 | 24.12555 | 9.6360 | 1.69 +/- 0.03 | +/- 48.2 | PASS |
| $F_2$ = 24.1290 | 24.12745 | 10.758 | 1.55 +/- 0.03 | +/- 48.2 | PASS |
| $F_3$ = 24.1300 | 24.12840 | 11.081 | 1.59 +/- 0.03 | +/- 48.2 | PASS |

**Test Frequency Set 3**

| Nominal Frequency (GHz) | Measured Frequency (GHz) | Amplitude (dBm) | Frequency Deviation (MHz) | Limit (MHz) | Results |
|---|---|---|---|---|---|
| $F_0$ = 24.1600 | 24.15870 | 7.9710 | 1.30 +/- 0.03 | +/- 48.2 | PASS |
| $F_1$ = 24.1672 | 24.16605 | 8.0150 | 1.20 +/- 0.03 | +/- 48.2 | PASS |
| $F_2$ = 24.1690 | 24.16780 | 9.2570 | 1.20 +/- 0.03 | +/- 48.2 | PASS |
| $F_3$ = 24.1700 | 24.16880 | 9.4320 | 1.20 +/- 0.03 | +/- 48.2 | PASS |

# Calibration Report

JENOPTIK

## System: OK

| | |
|---|---|
| Type: | 24F_ST_3 |
| Serial Number: | 590-113/65047 |
| Firmware Version: | G1J |
| Firmware Checksum: | 0x788A |
| Configfile: | TR6000.xml |
| Versions: | E77, H43, JC6, H8M, H53 |
| Date: | 16.04.2020 |
| Time: | 11:11:42 |
| Temperature: | 24,4 °C |
| Humidity: | 60 % |

## Test Measurements: OK

| Simulated Speed [km/h] | Measured Speed [km/h] | Measured Angle [deg] | Measured Distance [m] |
|---|---|---|---|
| 10,0 | 10,1 | 0,1 | 3,5 |
| 50,0 | 50,1 | 0,1 | 3,7 |
| 100,0 | 100,2 | 0,1 | 3,7 |
| 200,0 | 199,8 | 0,1 | 3,7 |
| 250,0 | 249,9 | 0,1 | 3,7 |
| 300,0 | 300,0 | 0,1 | 3,7 |

## Frequency Test: OK

| | required | | measured | |
|---|---|---|---|---|
| $f_0$: | 24,120 | GHz | 24,118 | GHz |
| $\Delta f_{01}$: | 7.250 | kHz | 7.234 | kHz |
| $\Delta f_{02}$: | 9.000 | kHz | 9.029 | kHz |
| $\Delta f_{03}$: | 10.000 | kHz | 10.028 | kHz |
| Rel. Tx Pwr: | -35,00 | dB | -33,45 | dB |

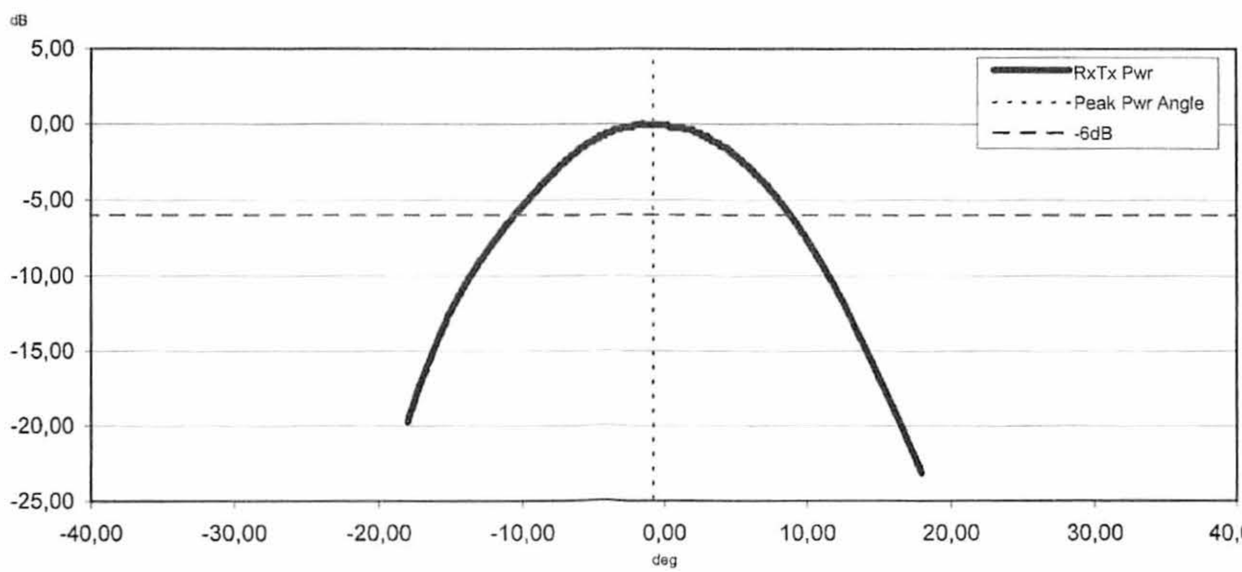
## Beam Characteristics: OK

| | required | | measured | |
|---|---|---|---|---|
| RxTx Pwr: | -38,00 | dB | -33,04 | dB |
| Peak Pwr Angle: | 0,00 | deg | -0,75 | deg |
| Beam Width: | 20,00 | deg | 19,43 | deg |

## Boardtest: OK

| | required | | measured | |
|---|---|---|---|---|
| Voltage ( +3.3 V ): | 3,30 | V | 3,30 | V |
| Voltage ( +1.8 V ): | 1,80 | V | 1,80 | V |
| Voltage ( +1.2 V ): | 1,20 | V | 1,21 | V |
| Voltage ( +6.0 V ): | 6,00 | V | 6,09 | V |
| Voltage ( +5.0 V ): | 5,00 | V | 5,04 | V |
| Voltage ( -5.0 V ): | -5,00 | V | -4,95 | V |
| Voltage ( +4.1 V ): | 4,10 | V | 4,10 | V |
| Voltage ( -4.1 V ): | -4,10 | V | -4,09 | V |
| Crystal Frequency: | 0,00 | Δppm | -47,15 | Δppm |
| Temperature ( Board ): | 25,0 | °C | 23,8 | °C |
| Temperature ( Acc.Sensor ): | 25,0 | °C | 25,7 | °C |
| Temperature ( Frontend ): | 25,0 | °C | 25,2 | °C |

## Beam Characteristics:




Certified by:

**PASSED**

VERRA MOBILITY

# PREVENTIVE MAINTENANCE CHECKLIST

**Date & Time: 12/15/2022 8:43:00** **Site ID: KRKF003** **Location: 80th St @ Rose Hill Elementary**

**Product: AutoPatrol** **Technician Name: Charles Goodrich** **See Associated Ticket:** ☐

| Item | Status | Note/Action (If Status N/A, please specify) |
|---|---|---|
| 1. Clean dirt, grime, and graffiti off enclosure and glass. | | |
| *1.1. Clean Graffiti.*<br>*Check physical integrity. Check paint/housing for graffiti and (or) other vandalism.* | *Pass* | |
| *1.2. Clean Glass:*<br>*Clean and inspect all glass and enclosures.* | *Pass* | |
| *1.3. Clean Enclosure (Interior):*<br>*Clear vents/fans of obstruction. Remove dust and dirt by vacuum/wiping.* | *Pass* | |
| *1.4. Check Enclosure:*<br>*If enclosure moved during cleaning, tighten base.* | *Pass* | |
| 2. Perform a general site inspection to include environmental and road conditions. | | |
| *2.1. PLP/Loop Loop:*<br>*Check for exposed or cut loop wiring, and epoxy wear and tear.* | | |
| *2.2. Power & Grounding:*<br>*Inspect all power and grounding connections.* | *Pass* | |
| *2.3. Radar:*<br>*Inspect radar and cables. Visually inspect antenna.* | *Pass* | |
| *2.4. WVDs:*<br>*Check for popped out pucks, visible cracks, or other noticeable damage.* | | |
| 3. Inspect poles, bases, and enclosures. | | |

| | | |
|---|---|---|
| *3.1. Pole:*<br><br>*Check sturdiness. Check hurricane collar and confirm screws are tight.* | *Pass* | |
| *3.2. Base:*<br><br>*Check for cracks. Ensure bolts (and latch bolt) are tight and secure inside base.* | *Pass* | |
| *3.3. Enclosure:*<br><br>*Confirm straps are tight and secure against pole. Tighten if loose.* | *Pass* | |
| 4. Inspect cables and connections. | | |
| *4.1. Cables:*<br><br>*Check all cables for visible wear or damage.* | *Pass* | |
| *4.2. Connections:*<br><br>*Check for exposed wires on pole connecting to radar, camera enclosure, and strobe.* | *Pass* | |

*5. Take (and attach) photo of enclosure, pole, and photo enforcement sign(s) for presence and damage.*

*5.1. Enclosure:*

*5.2. Pole:*

*5.3. Photo Enforcement Sign(s):*

VERRA MOBILITY

# PREVENTIVE MAINTENANCE CHECKLIST

**Date & Time: 12/15/2022 8:48:00** **Site ID: KRKF004** **Location: 80th St @ Rose Hill Elementary**

**Product: AutoPatrol** **Technician Name: Charles Goodrich** **See Associated Ticket:** ☐

| Item | Status | Note/Action (If Status N/A, please specify) |
|---|---|---|
| 1. Clean dirt, grime, and graffiti off enclosure and glass. | | |
| *1.1. Clean Graffiti.*<br>*Check physical integrity. Check paint/housing for graffiti and (or) other vandalism.* | *Pass* | |
| *1.2. Clean Glass:*<br>*Clean and inspect all glass and enclosures.* | *Pass* | |
| *1.3. Clean Enclosure (Interior):*<br>*Clear vents/fans of obstruction. Remove dust and dirt by vacuum/wiping.* | *Pass* | |
| *1.4. Check Enclosure:*<br>*If enclosure moved during cleaning, tighten base.* | *Pass* | |
| 2. Perform a general site inspection to include environmental and road conditions. | | |
| *2.1. PLP/Loop Loop:*<br>*Check for exposed or cut loop wiring, and epoxy wear and tear.* | | |
| *2.2. Power & Grounding:*<br>*Inspect all power and grounding connections.* | *Pass* | |
| *2.3. Radar:*<br>*Inspect radar and cables. Visually inspect antenna.* | *Pass* | |
| *2.4. WVDs:*<br>*Check for popped out pucks, visible cracks, or other noticeable damage.* | | |
| 3. Inspect poles, bases, and enclosures. | | |

| | | |
|---|---|---|
| *3.1. Pole:*<br><br>*Check sturdiness. Check hurricane collar and confirm screws are tight.* | *Pass* | |
| *3.2. Base:*<br><br>*Check for cracks. Ensure bolts (and latch bolt) are tight and secure inside base.* | *Pass* | |
| *3.3. Enclosure:*<br><br>*Confirm straps are tight and secure against pole. Tighten if loose.* | *Pass* | |
| 4. Inspect cables and connections. | | |
| *4.1. Cables:*<br><br>*Check all cables for visible wear or damage.* | *Pass* | |
| *4.2. Connections:*<br><br>*Check for exposed wires on pole connecting to radar, camera enclosure, and strobe.* | *Pass* | |

5. Take (and attach) photo of enclosure, pole, and photo enforcement sign(s) for presence and damage.

5.1. Enclosure:

5.2. Pole:

5.3. Photo Enforcement Sign(s):