CERTIFICATE CONCERNING DESIGN AND CONSTRUCTION OF ELECTRONIC SPEED MEASURING DEVICES

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

FILED MAY 2 9 2025

I have been employed as a technician by American Traffic Solutions for 4 years. I became a speed validation technician in 2020 and have over 1200 hours performing speed validation tests. I am nationally certified as a RADAR and LIDAR operator. The City of Kirkland currently uses the AutoPatrolTM 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
KRKF005	SB 724 STATE ST @ LAKEVIEW ELEMENTARY SCHOOL	1
KRKF006	WB 10600 NE 68TH ST @ LAKEVIEW ELEMENTARY SCHOOL	1
KRKF007	NB 12637 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES	1
KRKF008	SB 14006 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES	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

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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 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.



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	Location Description					
Code						
KRKF001	NB 132ND AVE NE @ MUIR ELEMENTARY/KAMIAKIN MIDDLE	4/23/2025				
KRKF002	SB 132ND AVE NE @ MUIR ELEMENTARY/KAMIAKIN MIDDLE	4/23/2025				
KRKF003	EB 80TH ST @ ROSE HILL ELEMENTARY	4/23/2025				
KRKF004	WB 80TH ST @ ROSE HILL ELEMENTARY	4/23/2025				
KRKF005	SB 724 STATE ST @ LAKEVIEW ELEMENTARY SCHOOL	4/23/2025				
KRKF006	WB 10600 NE 68TH ST @ LAKEVIEW ELEMENTARY SCHOOL	4/23/2025				
KRKF007	NB 12637 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES	4/23/2025				
KRKF008	SB 14006 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES	4/23/2025				

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

Dated this 17th day of May 2025 in Mesa, AZ

Katrina Sorich, Speed Validation Technician



Speed Validation Report Client: Kirkland, WA

Date: April 23, 2025

Locations:

- KRKF001 NB 132ND AVE NE @ MUIR ELEMENTARY/KAMIAKIN MIDDLE
 - Radar Serial Number: 590-112/61555
- KRKF002 SB 132ND AVE NE @ MUIR ELEMENTARY/KAMIAKIN MIDDLE
 - o Radar Serial Number: 590-112/62115
- KRKF003 EB 80TH ST @ ROSE HILL ELEMENTARY
 - o Radar Serial Number: 590-113/65637
- KRKF004 WB 80TH ST @ ROSE HILL ELEMENTARY
 - o Radar Serial Number: 590-112/60096
- KRKF005 SB 724 STATE ST @ LAKEVIEW ELEMENTARY SCHOOL
 - o Radar Serial Number: 590-112/60101
- KRKF006 WB 10600 NE 68TH ST @ LAKEVIEW ELEMENTARY SCHOOL
 - o Radar Serial Number: 590-113/61662
- KRKF007 NB 12637 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES
 - o Radar Serial Number: 590-112/61246
- KRKF008 SB 14006 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES
 - o Radar Serial Number: 590-112/62140

Equipment:

Kustom Pro-Lite Lidar Serial Number: LP03126 Certification Date: December 10, 2024

Technicians:

Lidar Operator: Bryan Cole Beck RLC Operator: Katrina Sorich

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1330 W. Southern Ave. • Tempe, Arizona 85282 • TEL: 480.443.7000

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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 Pro-Lite 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, Katrina Sorich, certify that the information contained in this report is true and accurate.

Signed: ______ Date: May 17, 2025 American Traffic Solution Katrina Sorich, Speed Validation Technician Speed Integrity Team



Certificate	, of Achievement							
Speed Integrity Technician								
Has successfully completed the training 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, the course certifies each participant as a Lidar Operator								
Presented to: Bryan Cole Beck	c							
This Day:11/07/2024								
Insa Get work done.	Douglas Trugillo Douglas Trujillo Police Traffic Laser/Radar Instructor							
315 Trane Drive	Knoxville, TN 37919 www.nsa.bz							
Certificate	of Achievement							
As 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:

Katrina Sorich

November 18, 2020

This Day:

American Traffic Solutions[™] Type Yol

Tylor Yochim Radar Instructor

RDLD Certificate of Achievement V1.0

American Traffic Solutions, Inc., 7681 East Gray Road, Scottsdale, AZ 85260

Certificate # VCC-1118-AZ-01



PB Electronics Inc.								
502 543-7032 <u>www.pbelectronics.com</u> Factory Authorized Calibration Center for Stalker, MPH, Kustom, Decatur and LTI								
Certificate of Calibration								
Manufacturer: Kustom Model: Pro-Lite Serial Number: LP03126								
I hereby certify that this Speed Measuring Device has been checked for accuracy and correctness of operation under my supervision. This Speed Measuring Device is certified accurately within +/- 0.5 mph in stationary mode using equipment traceable to National Institute of Standards and technology. The laser transmitter of this device has been tested and found to be within specified range for Laser Devices as established by the Federal Communications Commission and IACP.								
FCC License number PG-18-12552 Technician Signature								
PBELECTRONICS FECTORY ANTHOREZED STALKER Tuning Forks Serial Numbers: n/a Date: December 10, 2024 Date: December 10, 2024 NDUSTRIES RLAVERY STRAHOLOGY	а а							





SELF-ACCURACY TEST Kustom Pro-Lite Lidar Speed Measurement Tool

DATE: _____ April 23, 2025_____

Start of shift "Self-Diagnostic test" time:_____ 10:06 AM_____

Start of shift Distance check: ____100'____lidar

End of shift "Self-Diagnostic test" time: _____ 12:31 PM_____

End of shift Distance check: _____100'_____

City and State:___Kirkland, WA____

Lidar Serial Number: _____ LP03126_____

Certification Date: _____December 10, 2024_____

OPERATOR: _____Bryan Cole Beck_____

I, *Bryan Cole Beck*, certify that the Kustom 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: Bryan Cole Beck

Date: April 23, 2025





Date	and the second			4/23/2025		
Time			10:17 AM			
Site ID			KRKF001			
Location				Kirklan	d, WA	
			NB 132ND AVE NE @			
Address			MUIR ELEMENTARY/KAMIAKIN MIDDLE			
Posted Speed	l Limit			20M	PH	
Trigger Speed	d Limit	6. 15		26M	PH	
Speed Type				Sch	ool	
Lidar Technic	ian	unity in the second		Bryan Co	ole Beck	
AutoPatrol Te	chnician		Katrina Sorich			
Lidar Serial N	umber		LP03126			
Radar Serial N	lumber		590-112/61555			
Detection Typ	be		Autopatrol-Radar			
Measure Mod	e Capture			Ye	S	
Photo enforce	Photo enforcement signs present			Ye	S	
Pass/ Fail			Pas	SS		
Ascending or	Descending			Descending		
City Lane	Times	Lidar Speeds	AP Speeds	Delta	Comments	
1	10.17.58	25	26	1		
1	10.18.12	8	9	1		
1	10.18.21	9	9	0		
1	10.18.47	20	19	-1		
1	10.19.18	16	17 1			





Date			4/23/2025		
Time			10:11 AM		
Site ID				KRKF	-002
Location				Kirklan	d, WA
			SB 132ND AVE NE @		
Address			MUIR ELEMENTARY/KAMIAKIN MIDDLE		
Posted Speed Limit				20M	PH
Trigger Speed	d Limit			26M	PH
Speed Type				Sch	ool
Lidar Technic	ian			Bryan Co	le Beck
AutoPatrol Te	chnician	1 2 July on Var	Katrina Sorich		
Lidar Serial N	umber		LP03126		
Radar Serial Number			590-112/62115		
Detection Typ	e			Autopatro	ol-Radar
Measure Mode Capture				Ye	S
Photo enforce	hoto enforcement signs present			Ye	S
Pass/ Fail			Pas	SS	
Ascending or	Descending	Street Stores	Descending		
City Lane	Times	Lidar Speeds	AP Speeds	Delta	Comments
1	10.11.37	24	25	1	
1	10.11.43	24	25	1	
1	10.11.45	28	29	1	
1	10.12.23	22	22	0	
1	10.12.42	19	19 0		





Date			4/23/2025			
Time			11:38 AM			
Site ID				KRKF0	03	
Location				Kirkland,	WA	
Address			EB 80TH S	T @ ROSE H	ILL ELEMENTARY	
Posted Speed	I Limit			20MPH	4	
Trigger Speed	d Limit			26MPH	4	
Speed Type				Schoo	bl	
Lidar Technician				Bryan Cole	Beck	
AutoPatrol Technician				Katrina So	orich	
Lidar Serial Number			LP03126			
Radar Serial N	Radar Serial Number			590-113/65637		
Detection Typ	be			Autopatrol-	Radar	
Measure Mod	e Capture			Yes		
Photo enforcement signs present				Yes		
Pass/ Fail				Pass		
Ascending or	Descending			Descending		
City Lane	Times	Lidar Speeds	AP Speeds	Delta	Comments	
1	11.38.48	24	23	-1		
1	11.41.13	20	21	1		
1	11.41.19	25	24	-1		
1	11.41.42	23	23	0		
1	11.41.45	23	23 0			





Date			4/23/2025			
Time			11:31 AM			
Site ID				KRKF00	04	
Location		Contractor Prove 2		Kirkland,	WA	
Address			WB 80TH S	T @ ROSE H	ILL ELEMENTARY	
Posted Speed	Limit			20MPH	ł	
Trigger Speed	l Limit			26MPH	ł	
Speed Type				Schoo	l	
Lidar Technic	ian			Bryan Cole	Beck	
AutoPatrol Te	chnician			Katrina So	orich	
Lidar Serial N	Lidar Serial Number			LP03126		
Radar Serial N	lumber		590-112/60096			
Detection Typ	e		Autopatrol-Radar			
Measure Mod	e Capture		Yes			
Photo enforce	ement signs	present	Yes			
Pass/ Fail			Pass			
Ascending or	Descending		Descending			
City Lane	Times	Lidar Speeds	AP Speeds	Delta	Comments	
1	11.31.22	23	23	0		
1	11.31.56	21	21	0		
1	11.32.34	20	19	-1		
1	11.33.03	27	26	-1		
1	11.33.38	23	24	1		





Date			4/23/2025		
Time			12:25 PM		
Site ID				KRKF	-005
Location				Kirklan	d, WA
		111	Ş	SB 724 ST	ATE ST @
Address			LAKEVIEW ELEMENTARY SCHOOL		
Posted Speed	l Limit			20M	PH
Trigger Speed	l Limit			26M	PH
Speed Type				Sch	ool
Lidar Technic	lar Technician			Bryan Co	le Beck
AutoPatrol Te	chnician		Katrina Sorich		
Lidar Serial N	umber		LP03126		
Radar Serial N	lumber		590-112/60101		
Detection Typ	e			Autopatro	ol-Radar
Measure Mod	e Capture			Ye	S
Photo enforcement signs present			Ye	S	
Pass/ Fail			Pass		
Ascending or	Descending		Descending		
City Lane	Times	Lidar Speeds	AP Speeds	Delta	Comments
1	12.25.14	24	25	1	
1	12.25.33	22	23	1	
1	12.26.38	27	27	0	
1	12.26.47	24	23	-1	
1	12.26.49	22	23	1	





Date			4/23/2025			
Time			11:58 AM			
Site ID				KRK	-006	
Location				Kirklan	d, WA	
			WE	3 10600 NE	68TH ST @	
Address			LAKEVIEW ELEMENTARY SCHOOL			
Posted Speed	l Limit			20M	PH	
Trigger Speed	d Limit	A State of the second		26M	PH	
Speed Type				Sch	ool	
Lidar Technic	ian		Bryan Cole Beck			
AutoPatrol Te	AutoPatrol Technician			Katrina Sorich		
Lidar Serial N	umber		LP03126			
Radar Serial N	Radar Serial Number			590-113/61662		
Detection Typ	e	Rock Street		Autopatro	ol-Radar	
Measure Mod	e Capture			Ye	S	
Photo enforce	Photo enforcement signs present			Ye	S	
Pass/ Fail			Pas	ss		
Ascending or	Descending		Descending			
City Lane	Times	Lidar Speeds	AP Speeds	Delta	Comments	
1	11.58.27	25	25	0		
1	11.58.46	24	24	0		
1	11.59.11	18	17	-1		
1	11.59.28	28	28	0		
1	11.59.31	24	24 0			





Date			4/23/2025			
Time			10:44 AM			
Site ID			KRKF007			
Location				Kirkland	d, WA	
			NB 12637 84TH AVE NE @			
Address			SANDBURG ES / FINN HILL MS / THOREAU ES			
Posted Speed Limit				20M	PH	
Trigger Speed	d Limit			26M	PH	
Speed Type				Scho	ool	
Lidar Technic	ian			Bryan Co	le Beck	
AutoPatrol Te	chnician	のないの	Katrina Sorich			
Lidar Serial N	umber		LP03126			
Radar Serial N	lumber		590-112/61246			
Detection Type				Autopatro	ol-Radar	
Measure Mod	e Capture			Ye	S	
Photo enforce	Photo enforcement signs present			Ye	S	
Pass/ Fail				Pas	S	
Ascending or	Descending		Descending			
City Lane	Times	Lidar Speeds	AP Speeds	Delta	Comments	
1	10.44.28	29	29	0		
1	10.47.13	26	27	1		
1	10.47.21	21	21	0		
1	10.47.24	20	21	1		
1	10.47.33	21	22 1			





Date			4/23/2025			
Time	Section Section		11:00 AM			
Site ID			KRKF008			
Location				Kirklan	d, WA	
			SB	14006 84T	H AVE NE @	
Address			SANDBURG E	S / FINN H	ILL MS / THOREAU ES	
Posted Speed	l Limit			20M	PH	
Trigger Speed	d Limit			26M	PH	
Speed Type				Sch	ool	
Lidar Technic	ian			Bryan Co	ole Beck	
AutoPatrol Te	chnician			Katrina	Sorich	
Lidar Serial N	umber		LP03126			
Radar Serial N	Number		590-112/62140			
Detection Typ	be		Autopatrol-Radar			
Measure Mod	e Capture			Ye	S	
Photo enforce	hoto enforcement signs present			Ye	S	
Pass/ Fail			Pas	SS		
Ascending or	Descending			Desce	nding	
City Lane	Times	Lidar Speeds	AP Speeds Delta Comments			
1	11.00.19	25	24	-1		
1	11.00.39	21	20	-1		
1	11.01.09	28	28	0		
1	11.01.59	21	20	-1		
1	11.02.48	23	22	-1		



MAY 2 9 2025



MUNICIPAL COURT Report No.:

1910-071EA

Revision:

N/C

Radar Sensor Calibration Verification Certificate of Calibration

Model: RRS24F-ST3

Part Number / Serial Number: 590-112 / 61246 Ex. 590-XXX / 6XXXX

Description: Radar Characteristics Validation In compliance with: RRS24F-ST3 Radar Sensor Calibration Verification Procedure Documentation (5030-0150)

> Date of Issue: August 16, 2024

Owner of EUT:

Verra Mobility 1150 N. Alma School Rd Mesa, AZ 85201

Attention of:

Engineering Department Phone: (480) 443-7000

Test Facility				
Test Laboratory	Keystone Compliance, LLC			
Address	131 North Columbus Innerbelt			
City, State, Zip Code	New Castle, PA 16101			
Email	questions@keystonecompliance.com			
Web Site	www.keystonecompliance.com			

Test Personnel			
Name	Alex Herrin		
Title	EMC Test Engineer		
Signature	Kan / en		

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Report No.: 1910-071EA

Revision: N/C

Radar Sensor Calibration Verification Certificate of Calibration

Model: RRS24F-ST3

Part Number / Serial Number: 590-112 / 61246 Ex. 590-XXX / 6XXXX

Date of Issue: August 16, 2024

The frequency measurements performed and recorded within this report demonstrate that the JENOPTIK RR24F-ST3 radar has an accuracy of less than or equal to 0.62 mph in the range of 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, as specified by the manufacturer.

FSK Frequency Set 1						
Nominal Frequency	Measured Frequency	Amplitude	Frequency Deviation	Limit	Results	
(GHZ)	(GHZ)	(ubiii)				
$f_0 = 24.08$	24.07795	14.2118297	-2.05	+/- 48.2	PASS	
$f_1 = 24.08725$	24.085425	14.6214444	-1.83	+/- 48.2	PASS	
$f_2 = 24.089$	24.08705	15.7690754	-1.95	+/- 48.2	PASS	
$f_3 = 24.09$	24.088025	15.804436	-1.98	+/- 48.2	PASS	

FSK Frequency Set 2						
Nominal Frequency (GHz)	Measured Frequency (GHz)	Amplitude (dBm)	Frequency Deviation (MHz)	Limit (MHz)	Results	
f _o = 24.12	24.118575	13.5282461	-1.43	+/- 48.2	PASS	
f ₁ = 24.12725	24.125725	13.7388565	-1.53	+/- 48.2	PASS	
f ₂ = 24.129	24.127675	14.9044865	-1.33	+/- 48.2	PASS	
f ₃ = 24.13	24.12865	15.2218464	-1.35	+/- 48.2	PASS	

	FSK Frequency Set 3						
Nominal Frequency (GHz)	Measured Frequency (GHz)	Amplitude (dBm)	Frequency Deviation (MHz)	Limit (MHz)	Results		
f _o = 24.16	24.15855	14.9926386	-1.45	+/- 48.2	PASS		
f ₁ = 24.16725	24.1657	14.9992447	-1.55	+/- 48.2	PASS		
f ₂ = 24.169	24.16765	15.9108736	-1.35	+/- 48.2	PASS		
f ₃ = 24.17	24.168625	16.154233	-1.38	+/- 48.2	PASS		

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KIRKLAND MUNICIPAL CO OURT Report No .:

1910-071EA

Revision:

N/C

Radar Sensor Calibration Verification Certificate of Calibration

Model: RRS24F-ST3

Part Number / Serial Number: 590-112 / 62140 Ex. 590-XXX / 6XXXX

Description: Radar Characteristics Validation In compliance with: RRS24F-ST3 Radar Sensor Calibration Verification Procedure Documentation (5030-0150)

Date of Issue: August 15, 2024

Owner of EUT:

Verra Mobility 1150 N. Alma School Rd Mesa, AZ 85201

Attention of:

Engineering Department Phone: (480) 443-7000

Test Facility				
Test Laboratory	Keystone Compliance, LLC			
Address	131 North Columbus Innerbelt			
City, State, Zip Code	New Castle, PA 16101			
Email	questions@keystonecompliance.com			
Web Site	www.keystonecompliance.com			

Test Personnel			
Name	Alex Herrin		
Title	EMC Test Engineer		
Signature	Ker-14-		

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Report No.: 1910-071EA

Revision: N/C

Radar Sensor Calibration Verification Certificate of Calibration

Model: RRS24F-ST3

Part Number / Serial Number: 590-112 / 62140 Ex. 590-XXX / 6XXXX

Date of Issue: August 15, 2024

The frequency measurements performed and recorded within this report demonstrate that the JENOPTIK RR24F-ST3 radar has an accuracy of less than or equal to 0.62 mph in the range of 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, as specified by the manufacturer.

FSK Frequency Set 1						
Nominal Frequency (GHz)	Measured Frequency (GHz)	Amplitude (dBm)	Frequency Deviation (MHz)	Limit (MHz)	Results	
$f_0 = 24.08$	24.078275	15.1098297	-1.72	+/- 48.2	PASS	
f ₁ = 24.08725	24.08575	15.7764444	-1.50	+/- 48.2	PASS	
$f_2 = 24.089$	24.087375	16.9730754	-1.62	+/- 48.2	PASS	
f ₃ = 24.09	24.08835	17.214436	-1.65	+/- 48.2	PASS	

FSK Frequency Set 2						
Nominal Frequency (GHz)	Measured Frequency (GHz)	Amplitude (dBm)	Frequency Deviation (MHz)	Limit (MHz)	Results	
$f_0 = 24.12$	24.118575	14.9462461	-1.43	+/- 48.2	PASS	
f ₁ = 24.12725	24.12605	15.1548565	-1.20	+/- 48.2	PASS	
f ₂ = 24.129	24.127675	16.4824865	-1.33	+/- 48.2	PASS	
f ₃ = 24.13	24.12865	16.5058464	-1.35	+/- 48.2	PASS	

FSK Frequency Set 3						
Nominal Frequency	Nominal Frequency Measured Frequency Amplitude Frequency Deviation Limit					
(GHz)	(GHz)	(dBm)	(MHz)	(MHz)		
$f_0 = 24.16$	24.15855	16.0786386	-1.45	+/- 48.2	PASS	
f ₁ = 24.16725	24.1657	16.3812447	-1.55	+/- 48.2	PASS	
f ₂ = 24.169	24.16765	17.4518736	-1.35	+/- 48.2	PASS	
f ₃ = 24.17	24.168625	17.583233	-1.38	+/- 48.2	PASS	



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PREVENTIVE MAINTENANCE CHECKLIST

Date & Time: 04/27/2025 10:02:00

Site ID: KRKF007

Location: NB 12637 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES

Product: AutoPatrol

Technician Name: Thomas Yuen

See Associated Ticket:

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

3.1. Pole: Check sturdiness. Check hurricane collar and confirm screws are tight.	Pass	
3.2. Base: Check for cracks. Ensure bolts (and latch bolt) are tight and secure inside base.	Pass	
3.3. Enclosure: Confirm straps are tight and secure against pole. Tighten if loose.	Pass	
4. Inspect cables and connections.		
4.1. Cables: Check all cables for visible wear or damage.	Pass	
4.2. Connections: 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):



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PREVENTIVE MAINTENANCE CHECKLIST

Date & Time: 04/27/2025 10:05:00

Site ID: KRKF008

Location: SB 14006 84TH AVE NE @ SANDBURG ES / FINN HILL MS / THOREAU ES

Product: AutoPatrol

Technician Name: Thomas Yuen

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

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

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



5.2. Pole:



5.3. Photo Enforcement Sign(s):

5.1. Enclosure:

