

CERTIFICATION CONCERNING DESIGN AND CONSTRUCTION OF ELECTRONIC SPEED MEASURING DEVICES

I, Jason Lang declare under penalty of perjury under the laws of the state of Washington the foregoing is true and correct:

I am employed with Verra Mobility as a Supervisor of Field Services and have been employed in such a capacity for 17 years. Part of my duties include supervising the maintenance of all imbedded speed measuring devices (SMDs) used by Lakewood Police Department.

This agency currently uses the following SMD's at LAK-5208-01:

Model: 30 S/N: 0X000219B0

Model: 30 S/N: 0X00026306

I have the following qualifications with respect to the above stated SMD's:

- 14+ years of hand on radar training and experience
- 8+ years as a nationally certified lidar/radar trainer
- Training on the operation, functionality and repair of the SMD's
- Training on the speed validation process of the SMD's
- Training on daily troubleshooting and support of the SMD Devices

On 04/15/2024 review of the testing of the SMD's performed by the Redflex Traffic Systems, Inc., doing business as Verra Mobility Systems ("Verra Mobility") was conducted by an independent calibration testing agency in accordance with the manufacturer's standard radar certification procedures. The units were evaluated and met the radar certification standards as indicated by the attached certification.

This independent calibration testing agency maintains a testing and certification program. This program requires that the SMD is tested and verified it accurately detects and reports the required information for determining the speed of a vehicle. Additionally, field maintenance technicians perform a regular speed verification test to assure that the accuracy of the SMD does not vary between annual certifications. These verifications tests also include a physical examination of the SMD to assure they remain in proper physical condition.

Based upon my education, training, and experience and my knowledge of the SMD's listed above, it is my opinion that each of these electronic pieces of equipment are so designed and constructed as to accurately employ the laws of physics in such a manner that it will give accurate measurements of the speed of motor vehicles, as it transits a known distance, when properly Installed and calibrated.

(Signature) _____



Dated: 09/17/24

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Certification Results

Date (yyyy/mm/dd):	14/11/2023	Time (hh:mm):	11:50
*Test Location:	Phoenix Production	SMARTCAM Version:	5.60.22.0
Configured Device ID:	1	Manufacturing Number:	0x000219B0
Device Channel:	0	Radar Firmware Version:	X-000-07
RF Serial Number:	0x000219ED	DSP Serial Number:	0x000219B0
Verification Authority:	<i>Bil Ost</i>		
Certification valid for 24 months		Simulator Firmware:	1.02

*Test Location field for internal use only (not required for certification)

Frequency

Set Frequency Channel	Set Frequency Start (GHz)	Set Frequency End (GHz)	Measured Frequency Start (GHz)	Measured Frequency End (GHz)	Measured Frequency Peak (GHz)	PASS/FAIL
0	24.0810	24.0935	24.0848	24.0800	24.0630	PASS

Speed Accuracy

Convert Speed: **MPH**

Set Speed (MPH)	Expected Speed (MPH)	Reported Speed (MPH)	Delta Speed (MPH)	Max Delta Allowed (MPH)	PASS/FAIL
-100.00	-98.11	-98.80	0.69	1.99	PASS
-75.00	-73.57	-74.30	0.73	1.49	PASS
-50.00	-49.02	-49.00	0.02	1.00	PASS
50.00	49.02	49.00	0.02	1.00	PASS
75.00	73.57	74.30	0.73	1.49	PASS
100.00	98.11	98.80	0.69	1.99	PASS

Distance Accuracy - Location 1

Laser Distance Measurement 1 (meters):	19.6101
Laser Distance Measurement 2 (meters):	19.6102
Laser Distance Measurement 3 (meters):	19.6101
Average (meters):	19.6101

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	19.6101	20.0100	-0.5500	-20.0100	0.3999	NA	0.9805	NA	PASS
100	19.6101	19.9900	-0.6700	-19.9800	0.3799	1	0.9805	PASS	NA

*Multiply the "Laser Distance Measurement Average Range (meters)" value by 0.05 to populate this field.

Distance Accuracy - Location 2

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Laser Distance Measurement 1 (meters):	9.3865
Laser Distance Measurement 2 (meters):	9.3864
Laser Distance Measurement 3 (meters):	9.3863
Average (meters):	9.3864

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	9.3864	9.7300	-0.2200	-9.6500	0.3436	1	0.4693	PASS	NA
100	9.3864	9.7400	-0.2200	-97.4000	0.3536	1	0.4693	PASS	NA

*Multiply the "Laser Distance Measurement Average Range (meters)" value by 0.05 to populate this field.

Cal-Tec, Inc., ("Cal-Tec"), a corporation with its principal place of business at 114 Thruway Park, Broussard, LA 70518, has personally observed Redflex Traffic Systems Inc. ("Redflex") perform its standard radar certification procedures on prior occasions, is familiar with Redflex's standard radar certification procedures, and verifies that those procedures are sufficient to ensure that the Redflex's devices meet radar certification standards

As the Tester, I certify that I followed Redflex's standard radar certification procedures on device number: 0x000219B0 (Redflex Serial).

Tester Signature: 

Printed Name: Luy Pham

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Certification Results

Date (yyyy/mm/dd):	14/11/2023	Time (hh:mm):	11:00
*Test Location:	Phoenix Production	SMARTCAM Version:	5.60.22.0
Configured Device ID:	1	Manufacturing Number:	0x0002630C
Device Channel:	0	Radar Firmware Version:	X-000-07
RF Serial Number:	0x00022944	DSP Serial Number:	0x00022844
Verification Authority:	<i>B. East</i>		
Certification valid for 24 months		Simulator Firmware:	1.02

*Test Location field for internal use only (not required for certification)

Frequency

Set Frequency Channel	Set Frequency Start (GHz)	Set Frequency End (GHz)	Measured Frequency Start (GHz)	Measured Frequency End (GHz)	Measured Frequency Peak (GHz)	PASS/FAIL
0	24.0810	24.0935	24.0892	24.0854	24.0830	PASS

Speed Accuracy

Convert Speed: **MPH**

Set Speed (MPH)	Expected Speed (MPH)	Reported Speed (MPH)	Delta Speed (MPH)	Max Delta Allowed (MPH)	PASS/FAIL
-100.00	-98.11	-98.80	0.69	1.99	PASS
-75.00	-73.57	-74.30	0.73	1.49	PASS
-50.00	-49.02	-49.00	0.02	1.00	PASS
50.00	49.02	49.00	0.02	1.00	PASS
75.00	73.57	74.30	0.73	1.49	PASS
100.00	98.11	98.80	0.69	1.99	PASS

Distance Accuracy - Location 1

Laser Distance Measurement 1 (meters):	10.3457
Laser Distance Measurement 2 (meters):	10.3457
Laser Distance Measurement 3 (meters):	10.3453
Average (meters):	10.3456

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	10.3456	10.5900	-0.4400	-10.5800	0.2444	1	0.5173	PASS	NA
100	10.3456	10.6800	-0.4100	-10.6700	0.3344	1	0.5173	PASS	NA

*Multiply the "Laser Distance Measurement Average Range (meters)" value by 0.05 to populate this field.

Distance Accuracy - Location 2

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Laser Distance Measurement 1 (meters):	17.5233
Laser Distance Measurement 2 (meters):	17.5236
Laser Distance Measurement 3 (meters):	17.5234
Average (meters):	17.5234

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	17.5234	17.5600	-0.6500	-17.6500	0.0366	1	0.8762	PASS	NA
100	17.5234	17.5400	-0.6400	-17.5400	0.0166	1	0.8762	PASS	NA

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As the Tester, I certify that I followed Redflex's standard radar certification procedures on device number: 0x0002630C (Redflex Serial).

Tester Signature: 

Printed Name: Luy Pham

CERTIFICATION CONCERNING DESIGN AND CONSTRUCTION OF ELECTRONIC SPEED MEASURING DEVICES

I, Jason Lang declare under penalty of perjury under the laws of the state of Washington the foregoing is true and correct:

I am employed with Verra Mobility as a Supervisor of Field Services and have been employed in such a capacity for 17 years. Part of my duties include supervising the maintenance of all imbedded speed measuring devices (SMDs) used by Lakewood Police Department.

This agency currently uses the following SMD's at LAK-9904-01:

Model: 30 S/N: 0X0002B579

Model: 30 S/N: 0X00024DA0

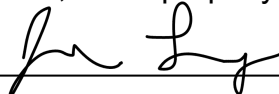
I have the following qualifications with respect to the above stated SMD's:

- 14+ years of hand on radar training and experience
- 8+ years as a nationally certified lidar/radar trainer
- Training on the operation, functionality and repair of the SMD's
- Training on the speed validation process of the SMD's
- Training on daily troubleshooting and support of the SMD Devices

On 04/15/2024 review of the testing of the SMD's performed by the Redflex Traffic Systems, Inc., doing business as Verra Mobility Systems ("Verra Mobility") was conducted by an independent calibration testing agency in accordance with the manufacturer's standard radar certification procedures. The units were evaluated and met the radar certification standards as indicated by the attached certification.

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Based upon my education, training, and experience and my knowledge of the SMD's listed above, it is my opinion that each of these electronic pieces of equipment are so designed and constructed as to accurately employ the laws of physics in such a manner that it will give accurate measurements of the speed of motor vehicles, as it transits a known distance, when properly Installed and calibrated.

(Signature)  _____

Dated: 09/17/24 _____

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Certification Results

Date (yyyy/mm/dd):	2024/04/15	Time (hh:mm):	9:00
*Test Location:	phoenix warehouse	SMARTCAM Version:	5.60.22.0
Configured Device ID:	1	Manufacturing Number:	0x0002B579
Device Channel:	0	Radar Firmware Version:	X-000-07
RF Serial Number:	0x00025A1C	DSP Serial Number:	0x0002AA2D
Verification Authority:	<i>Bilal</i>		
Certification valid for 24 months		Simulator Firmware:	1.02

*Test Location field for internal use only (not required for certification)

Frequency

Set Frequency Channel	Set Frequency Start (GHz)	Set Frequency End (GHz)	Measured Frequency Start (GHz)	Measured Frequency End (GHz)	Measured Frequency Peak (GHz)	PASS/FAIL
0	24.0810	24.0935	24.0820	24.0904	24.0896	PASS

Speed Accuracy

Convert Speed: **MPH**

Set Speed (MPH)	Expected Speed (MPH)	Reported Speed (MPH)	Delta Speed (MPH)	Max Delta Allowed (MPH)	PASS/FAIL
-100.00	-98.11	-98.80	0.69	1.99	PASS
-75.00	-73.57	-74.30	0.73	1.49	PASS
-50.00	-49.02	-49.00	0.02	1.00	PASS
50.00	49.02	49.00	0.02	1.00	PASS
75.00	73.57	74.30	0.73	1.49	PASS
100.00	98.11	98.80	0.69	1.99	PASS

Distance Accuracy - Location 1

Laser Distance Measurement 1 (meters):	9.7419
Laser Distance Measurement 2 (meters):	9.7423
Laser Distance Measurement 3 (meters):	9.7422
Average (meters):	9.7421

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	9.7421	9.8300	0.7320	-9.8060	0.0879	1	0.4871	PASS	NA
100	9.7421	9.7200	0.7950	-9.6890	0.0221	1	0.4871	PASS	NA

*Multiply the "Laser Distance Measurement Average Range (meters)" value by 0.05 to populate this field.

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Distance Accuracy - Location 2

Laser Distance Measurement 1 (meters):	14.4820
Laser Distance Measurement 2 (meters):	14.4814
Laser Distance Measurement 3 (meters):	14.4817
Average (meters):	14.4817

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	14.4817	15.0500	0.4830	-15.0430	0.5683	1	0.7241	PASS	NA
100	14.4817	14.9800	0.4890	-14.9660	0.4983	1	0.7241	PASS	NA

*Multiply the "Laser Distance Measurement Average Range (meters)" value by 0.05 to populate this field.

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As the Tester, I certify that I followed Redflex's standard radar certification procedures on device number: 0x0002B579 (Redflex Serial).

Tester Signature: *Kelon Prince*

Printed Name: Kelon Prince

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Certification Results

Date (yyyy/mm/dd):	2024/04/15	Time (hh:mm):	9:15
*Test Location:	phoenix warehouse	SMARTCAM Version:	5.60.22.0
Configured Device ID:	1	Manufacturing Number:	0x00024DA0
Device Channel:	0	Radar Firmware Version:	X-000-07
RF Serial Number:	0x00024CA3	DSP Serial Number:	0x00024DA0
Verification Authority:	<i>Bill Ost</i>		
Certification valid for 24 months		Simulator Firmware:	1.02

*Test Location field for internal use only (not required for certification)

Frequency

Set Frequency Channel	Set Frequency Start (GHz)	Set Frequency End (GHz)	Measured Frequency Start (GHz)	Measured Frequency End (GHz)	Measured Frequency Peak (GHz)	PASS/FAIL
0	24.0810	24.0935	24.0816	24.0908	24.0824	PASS

Speed Accuracy

Convert Speed: **MPH**

Set Speed (MPH)	Expected Speed (MPH)	Reported Speed (MPH)	Delta Speed (MPH)	Max Delta Allowed (MPH)	PASS/FAIL
-100.00	-98.11	-98.80	0.69	1.99	PASS
-75.00	-73.57	-74.30	0.73	1.49	PASS
-50.00	-49.02	-49.00	0.02	1.00	PASS
50.00	49.02	49.00	0.02	1.00	PASS
75.00	73.57	74.30	0.73	1.49	PASS
100.00	98.11	98.80	0.69	1.99	PASS

Distance Accuracy - Location 1

Laser Distance Measurement 1 (meters):	14.4090
Laser Distance Measurement 2 (meters):	14.4091
Laser Distance Measurement 3 (meters):	14.4088
Average (meters):	14.4090

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	14.4090	15.3300	1.0650	-15.2920	0.9210	1	0.7204	PASS	NA
100	14.4090	15.4000	1.1170	-15.3610	0.9910	1	0.7204	PASS	NA

*Multiply the "Laser Distance Measurement Average Range (meters)" value by 0.05 to populate this field.

CAL-TEC, Inc.

114 Thruway Park Broussard, LA 70518

Distance Accuracy - Location 2

Laser Distance Measurement 1 (meters):	10.4157
Laser Distance Measurement 2 (meters):	10.4163
Laser Distance Measurement 3 (meters):	10.4157
Average (meters):	10.4159

Set Speed (MPH)	Laser Distance Measurement Average Range (meters)	Simulator Range Measurement (meters)	System X Coordinate (meters) Not Required (diagnostic only)	System Y Coordinate (meters) Not Required (diagnostic only)	Delta Distance (meters)	Max Delta Allowed (meters) Distances less than 20 meters	Max Delta Allowed (meters)* Distances greater than 20 meters	PASS/FAIL distance less than 20 meters	PASS/FAIL distance greater than 20 meters
-100	10.4159	11.3500	-0.1270	-11.3550	0.9341	1	0.5208	PASS	NA
100	10.4159	11.3600	-0.0820	-11.3580	0.9441	1	0.5208	PASS	NA

*Multiply the "Laser Distance Measurement Average Range (meters)" value by 0.05 to populate this field.

Cal-Tec, Inc., ("Cal-Tec"), a corporation with its principal place of business at 114 Thruway Park, Broussard, LA 70518, has personally observed Redflex Traffic Systems Inc. ("Redflex") perform its standard radar certification procedures on prior occasions, is familiar with Redflex's standard radar certification procedures, and verifies that those procedures are sufficient to ensure that the Redflex's devices meet radar certification standards

As the Tester, I certify that I followed Redflex's standard radar certification procedures on device number: 0x00024DA0 (Redflex Serial).

Tester Signature: Kelon Prince

Printed Name: Kelon Prince