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**CERTIFICATION CONCERNING DESIGN AND CONSTRUCTION
OF ELECTRONIC SPEED MEASURING DEVICES
AND LASER SPEED MEASURING DEVICES**

RECEIVED

DEC 16 2014

LAYWOOD LEGAL DEPARTMENT

I, Jorge Marciano, do certify under penalty of perjury, under the laws of the State of Washington, in the County of Pierce, that the following is true and correct:

I am employed with Pierce County as a Communications Systems Technician, Speed Measuring Device (SMD) Specialist, and assigned as the custodian of the SMD records. I have been employed in this capacity since Sep 10, 2007. Part of my duties include the maintenance and repair of all types of electronic radar and laser speed measuring devices (SMD's) used by the Pierce County Sheriff's Department.

The Pierce County Sheriff's Department currently uses the following SMD's:

SMD TYPE:	MODEL:	SERIAL #:	MANUFACTURE:
Radar	TS-3	690	MPH Industries
Radar	Kustom Falcon	FF10931	Kustom Signals
Radar	Kustom Falcon	FF18264	Kustom Signals
Radar	MPH Z-35	HHS570000154	MPH Industries
Radar	MPH Z-35	HHS570000217	MPH Industries
Radar	MPH K-15	K15115000776	MPH Industries
Radar	MPH K-15	K15115000783	MPH Industries
Radar	MPH Python	PYT380000218	MPH Industries
Radar	MPH Python	PYT380000219	MPH Industries
Radar	MPH Python	PYT380000438	MPH Industries
Radar	MPH Python	PYT380000570	MPH Industries
Radar	MPH Python	PYT380000786	MPH Industries
Radar	MPH Python	PYT380001395	MPH Industries
Radar	MPH Python	PYT380001397	MPH Industries
Radar	MPH Python	PYT380001682	MPH Industries
Radar	MPH Python	PYT546000410	MPH Industries
Radar	MPH Python	PYT546000465	MPH Industries
Radar	MPH Python	PYT546000516	MPH Industries
Radar	MPH Python	PYT546001043	MPH Industries
Radar	MPH Python	PYT546001345	MPH Industries
Radar	MPH Python	PYT546001944	MPH Industries
Radar	MPH Python	PYT546002565	MPH Industries
Radar	MPH Python	PYT546002877	MPH Industries
Radar	MPH Python	PYT546002959	MPH Industries
Radar	MPH Python	PYT546003357	MPH Industries
Radar	MPH Python	PYT546004027	MPH Industries
Radar	MPH Python	PYT546004259	MPH Industries
Radar	MPH Python	PYT546005167	MPH Industries
Radar	MPH Python	PYT546006424	MPH Industries
Radar	MPH Python	PYT846001839	MPH Industries
Laser	Kustom ProLaser III	PL17799	Kustom Signals
Laser	Kustom ProLaser III	PL17806	Kustom Signals



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

I have seven years military experience as a communications specialist in the maintenance and repair of electronics equipment and seven years with Pierce County repairing, maintaining, and certifying SMD's for counties and cities throughout the state. I received training from the following manufacturers as well as from the Pierce County Engineer. On Dec 13, 2007, I successfully completed the Decatur Electronics course in repair and service of Doppler traffic radar and on Mar 13, 2008, I successfully completed the MPH Industries course in repair and service of Doppler traffic radar. Further, on Jan 14, 2009, I successfully completed the requirements for Kustom Signals certification in operation and maintenance of Doppler traffic radar and traffic laser and on Sep 3, 2009, I successfully completed the requirements for Applied Concepts certification in operation and maintenance of Doppler traffic radar and traffic laser.

The Pierce County Radio Communications Division maintains manuals for all of the above listed SMD's. I am personally familiar with those manuals and know how each of the SMD's are designed and operated. From Dec 17, 2007 to Aug 16, 2013, I performed all of the SMD testing. The units are evaluated and certified to meet or exceed existing performance standards.

The Pierce County Radio Communications Division maintains a testing and certification program for the Pierce County Sheriff's Department wherein each SMD is inspected and checked every 24 months by the following means:

Radar SMD's utilize the Doppler effect to measure speed. Testing consists of using a precision signal generator to inject a signal into the SMD to simulate speeds of 35mph and 65mph for the stationary/moving radars. It also includes injection of a signal to simulate 35mph for stationary radar only. The signal must cause the SMD to display the exact speed, ± 1 mile per hour, in order to be certified for accuracy. I then measure the frequency of the tuning fork(s) assigned to each SMD to insure that they are within ± 5 Hz tolerance. I issue a certificate of accuracy for both the SMD and the tuning fork(s). The original certificates are issued to the Pierce County District Court. I also retain a copy for my records along with the maintenance and service records for each SMD serviced.

Laser SMD's measure speed based on the velocity of light and a precision time base reference. Testing consists of four accuracy certification checks (1) Internal Self Test (2) Pulse Check to include; pulse width, power output, pulse repetition rate, and double pulse (3) Fixed Distance Check to include; sight alignment, vertical, and horizontal beam width ≥ 200 feet (4) and Internal Oscillator Check. The checks insure that the SMD is within tolerance and functioning properly. I then issue a certificate of accuracy for each SMD. The original certificates are issued to the Pierce County Sheriff's Department who in turn issues a copy to the Court. I also retain a copy for my records along with the maintenance and service records for each SMD serviced.

All radar SMD's operated by the Pierce County Sheriff's Department directly measure by digital message from the Doppler signal. They do not reconstitute the Doppler signal in any way, including the use of devices such as a phase lock loop (PLL), before the speed is measured.

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 is so designed and constructed as to accurately employ the Doppler effect in such a manner that it will give accurate measurements of the speed of motor vehicles when properly calibrated and operated by a trained operator.



I certify under the penalty of perjury, under the laws of the State of Washington, that the foregoing is true and correct.

Jorge Marciano

Jorge Marciano
Communications Systems Technician/
Speed Measuring Device Specialist

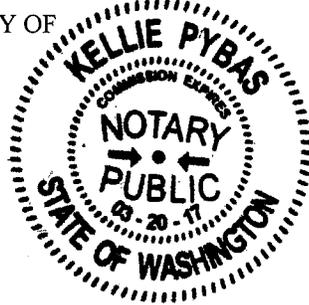
Signed and dated at Tacoma, Washington Dec 11, 2014

SUBSCRIBED AND SWORN TO BEFORE ME THIS 11th DAY OF December 2014.

Kellie Pybas

Notary Public in and for the State of Washington, County of Pierce.

Commission expires 3-20-2017.





DEC 16 2014

SHERIFF DEPARTMENT

**Pierce County
Radio Communications**

1422 112th Street East
Tacoma, Washington 98445

(253) 789-7147

CERTIFICATE OF ACCURACY

I, Jorge Marciano, do certify under the penalty of perjury, under the laws of the State of Washington, in the County of Pierce, that all applicable tests and measurements were made on the laser Speed Measuring Device (SMD) listed below. The SMD was found to meet or exceed all manufacturer's specifications.

Laser SMD Information and Certification Summary

Manufacturer:	<u>Kustom Signals</u>	Date Certified:	<u>11-Dec-14</u>
Model:	<u>ProLaser III</u>	Agency:	<u>Pierce County Sheriff Department</u>
Serial Number:	<u>PL17799</u>		

Distance Tests

Long Range	Expected: 205.0 ft	Tested: 204.7 ft	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
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Operational Tests

Controls Operational	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
RFI Indicator	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

Pulse Characteristics Tests

Pulse Frequency (Rep Rate)	Expected: 199.98 to 200	Tested: 200.00 Hz	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Pulse Width	Expected: <=100 nS	Tested: 22.50 nS	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Double Pulse			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

Beam Characteristics Tests

Optical Power	Expected: <=200 mW	Tested: 172.77 uW	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Wavelength	Expected: NA	Tested: ND	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Horizontal Beam Width			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Vertical Beam Width			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Sight Alignment			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

I certify under penalty of perjury, under the laws of the State of Washington, that the foregoing is true and correct.

Dated and Signed at Tacoma, Washington

12/14/14
DATE

[Signature]
SIGNED



RECEIVED
 DEC 16 2014
 LAW ENFORCEMENT DEPARTMENT

**Pierce County
 Radio Communications**

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 Tacoma, Washington 98445

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Laser SMD Information and Certification Summary

Manufacturer:	<u>Kustom Signals</u>	Date Certified:	<u>11-Dec-14</u>
Model:	<u>ProLaser III</u>	Agency:	<u>Pierce County Sheriff Department</u>
Serial Number:	<u>PL17806</u>		

Distance Tests

Long Range	Expected: 205.0 ft	Tested: 204.3 ft	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
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Operational Tests

Controls Operational	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
RFI Indicator	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

Pulse Characteristics Tests

Pulse Frequency (Rep Rate)	Expected: 199.98 to 200	Tested: 200.00 Hz	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Pulse Width	Expected: <=100 nS	Tested: 11.25 nS	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Double Pulse			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

Beam Characteristics Tests

Optical Power	Expected: <=200 mW	Tested: 168.62 uW	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Wavelength	Expected: NA	Tested: ND	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Horizontal Beam Width			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Vertical Beam Width			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
Sight Alignment			<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

I certify under penalty of perjury, under the laws of the State of Washington, that the foregoing is true and correct.

Dated and Signed at Tacoma, Washington 12/11/14 [Signature]
 DATE SIGNED