

## MUNICIPAL COURT

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# Speed Measuring Device (SMD) Calibration Certificates for **DUPONT**

SUSAN ADAMS  
MUNICIPAL COURT  
JUDGE

DEANA L. WRIGHT  
MUNICIPAL COURT  
ADMINISTRATOR

Last updated 10/25/2019

*\*Calibrations are good for 2 years\**





## CERTIFICATION CONCERNING DESIGN AND CONSTRUCTION OF ELECTRONIC SPEED MEASURING DEVICES

I, Raymond Fleming, 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 August 29<sup>th</sup>, 2016. Part of my duties include the maintenance and repair of all types of electronic radar speed measuring devices (SMD's) used by the Dupont Police Department.

The Dupont Police Department currently uses the following SMD's:

<b>SMD TYPE:</b>	<b>MODEL:</b>	<b>MANUFACTURE:</b>
Radar	Genesis II Select	Decatur Electronics
Radar	Genesis GHD	Decatur Electronics
Radar	Falcon HR	Kustom Signals
Radar	Golden Eagle II	Kustom Signals
Radar	Directional Golden Eagle II	Kustom Signals
Radar	HR-12	Kustom Signals
Radar	Dual SL	Stalker Radar
Radar	Python	MPH Industries
Laser	Compact Speed Lidar	Dragoneye Technology
Laser	Stalker LR	Stalker Radar

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

I have twenty-five years combined military and civilian experience as a communications specialist in the maintenance and repair of electronics equipment and three years with Pierce County repairing, maintaining, and certifying SMD's for cities throughout the state. I received training from the following manufacturer as well as from the Pierce County Lead Systems Technician. On March 22, 2017 I successfully completed the MPH Industries course in operation and maintenance of Doppler traffic radar and traffic laser. On April 4<sup>th</sup>, 2019 I successfully completed the Laser Technology Inc, course for factory service training on the LTI Tru-Speed S series laser radar.

The Pierce County Radio Communications Division maintains manuals for all 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 March 22, 2017 to October 8th, 2019. I performed all 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 Dupont Police 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,  $\pm 1$  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  $\pm 5$ Hz tolerance. I issue a certificate of accuracy for



both the SMD and the tuning fork(s). The original certificates are issued to the Dupont Police 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.

Laser SMD's measure speed based on the velocity of light and a precision time base reference. Testing consists of three accuracy certification checks (1) Internal Self Test (2) Pulse Check to include; pulse width, power output, pulse repetition rate, and double pulse (3) and a Distance Check to include; sight alignment, vertical, and horizontal beam width  $\geq 200$  feet. 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 Dupont Police 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 Dupont Police 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 radar 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 or, in the case of laser SMD's, each of these pieces of equipment is so designed and constructed as to accurately employ measurement techniques based on the velocity of light 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.

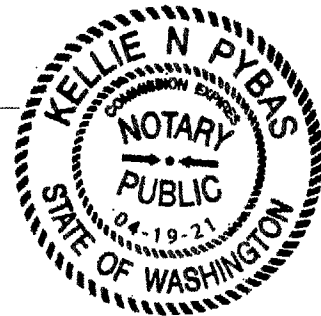
Raymond Fleming  
Communications Systems Technician/  
Speed Measuring Device Specialist

Signed and dated at Tacoma, Washington

SUBSCRIBED AND SWORN TO BEFORE ME THIS 8TH DAY OF  
OCTOBER 2019.

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

Commission expires 4-19-2021.





Pierce County  
Radio Communications

1422 112<sup>th</sup> Street East  
Tacoma, Washington 98445  
(253) 798-7147

**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Stalker Radar</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Stalker Dual SL</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>D107395</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>257384</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>2622</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>25</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>364682</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>4168</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>40</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington 10/01/2019 [Signature]  
DATED SIGNED



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Radio Communications

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**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Stalker Radar</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Stalker Dual SL</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>DD010837</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>248850</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>2620</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>25</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>356228</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>4168</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>40</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington 10/01/2019 Raymond Fleming  
DATED SIGNED



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Radio Communications

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**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Stalker Radar</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Stalker Dual SL</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>DD011834</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>250617</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>2610</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>25</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>358293</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>4159</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>40</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington 10/01/2019 Raymond Fleming  
DATED SIGNED



Pierce County  
Radio Communications

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Tacoma, Washington 98445  
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**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Kustom Signals, INC</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Kustom Golden Eagle II</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>XE25861</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>56268</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>3215</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>30</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>56501</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>5893</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>55</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington

10/01/2019  
DATED

[Signature]  
SIGNED



Pierce County  
Radio Communications

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Tacoma, Washington 98445  
(253) 798-7147

**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Decatur Electronics</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Genesis II Select</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>G2S-28843</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>209836</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>3728</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>35</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>209924</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>5359</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>50</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington

10/01/2019  
DATED

Raymond Fleming  
SIGNED





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**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Kustom Signals, INC</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Kustom Golden Eagle II</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>XE25865</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>56269</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>3214</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>30</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>56221</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>5895</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>55</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington 10/01/2019  
DATED

Raymond Fleming  
SIGNED



**Pierce County  
Radio Communications**

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**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Decatur Electronics</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Genesis II Select</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>G2S-24907</u>		
Operating Frequency Band:	<u>K</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>275931</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>2532</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>K</u>		
MPH:	<u>35</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>280651</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>4727</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>K</u>		
MPH:	<u>65</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington

10/01/2019  
DATED

[Signature]  
SIGNED



**Pierce County  
Radio Communications**

1422 112<sup>th</sup> Street East  
Tacoma, Washington 98445  
(253) 798-7147

**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Kustom Signals, INC</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Kustom Golden Eagle II</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>XE25862</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>56265</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>3214</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>30</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>56223</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>5897</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>55</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington

10/01/2019  
DATED

Raymond Fleming  
SIGNED



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**CERTIFICATE OF CALIBRATION & ACCURACY**

I, Raymond Fleming, 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 following Doppler Traffic Radar equipment:

Manufacturer:	<u>Stalker Radar</u>	Date Certified:	<u>10/01/2019</u>
Model:	<u>Stalker Dual SL</u>	Agency:	<u>Dupont PD</u>
Serial Number:	<u>DD010836</u>		
Operating Frequency Band:	<u>Ka</u>		

The aforesaid radar meets and exceeds all manufacturer's specifications.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>248857</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>2615</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>25</u>		

When operated between the temperature of -22F to +140F no correction is required.

**TUNING FORK**

I, Raymond Fleming, 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 following Doppler Radar Tuning Forks:

Tuning Fork Serial No.:	<u>356230</u>	Date Certified:	<u>10/01/2019</u>
Oscillation (Cycles per Second):	<u>4163</u>	Agency:	<u>Dupont PD</u>
Operating Frequency Band:	<u>Ka</u>		
MPH:	<u>40</u>		

When operated between the temperature of -22F to +140F no correction is required.

I certify under penalty of perjury, under the laws of the State of Washington, that the above statements are true and correct.

Dated and Signed at Tacoma, Washington 10/01/2019 Raymond Fleming  
DATED SIGNED