August 9, 2012

Chris Conley
Technology and Civil Liberties Project
American Civil Liberties Union of Northern California
39 Drumm Street
San Francisco, CA 94111

Re: Public Records Act Request Regarding Automatic License Plate Readers

Dear Chris:

We are in receipt of your letter dated July 31, 2012 requesting information under the California Public Records Act regarding automatic license plate readers (ALPRs). In response to that request, we are providing the following information.

Records Requested

1. All records regarding your policies, practices and procedures for procuring and using ALPR technology, and for storing, accessing and sharing data obtained through ALPR technology;
   - Piedmont Police Department Policy #462 is attached.

2. All records regarding the procurement of ALPR technology, including
   a. any needs assessment or other analysis of the decision to procure ALPR technology
   b. the number of ALPR units or systems acquired;
   - The Piedmont Police Department has one ALPR unit which was acquired in April 2010.
   c. sources of funds used to pay for ALPR technology;
   - Funds utilized for this purchase were from FY 10-11 State of California Citizen Option for Public Safety (COPS) AB 3229 funds. 100% of purchase price, installation and training,
• touch screen monitor, and computer storage solution were paid as part of these funds.

d. invoices for the purchase of ALPR technology;
   • See attached invoice from PIPS Technology Inc. dated April 8, 2010.

e. local government approval for any ALPR purchase;
   • Department Head signature/approval sole requirement.

f. requests for proposal (RFP) for the procurement of ALPR technology and bid documents submitted in response;
   • See attached bids from PIPS Technology Inc., WATTCO, and PlateScan.

g. analysis or review of responses to any RFP;
   • Department Head/Police Captain review; no analysis available.

h. interactions with vendors, suppliers and potential suppliers of ALPR technology, including materials and fact sheets supplied by vendors describing their products;
   • None available and/or retained.

i. make, model and manufacturers' specifications and instructions for ALPR unit(s) ultimately procured by your agency;
   • PIPS Technology, Model Slate-810-LE-G; requires stand-alone backroom computer for records storage as well as in-car computer to interface with camera system.

3. All records regarding the use of ALPR technology, including
   a. the number of vehicles equipped with ALPR technology;
      • (1) Piedmont Police Department marked patrol unit.

   b. for stationary deployments, the number and physical location of ALPR units;
      • None.

   c. the technical capabilities of the ALPR units;
      • Recording of license plates, with attachment of GPS coordinate location, date, time, and photo of plate.

   d. what types of data are obtained by the use of ALPR units;
      • The conversion of data associated with vehicle license plates, to obtain information on stolen or wanted vehicles, stolen license plates, and missing persons. Data may also indicate information related to active warrants.

   e. the purposes for which data obtained by the use of ALPR units are used;
      • To obtain information on stolen or wanted vehicles, stolen license plates, and missing persons. ALPR is also used to potentially gather data information related to active warrants, homeland security, electronic surveillance, suspect interdiction and stolen property recovery.

   f. the number of license plates scanned and/or read in a given time period (day, month, year, etc.)
• For the period of the past 12 months, the Piedmont Police Department currently has stored 1,641,841 records.

4. All records regarding the storage of data obtained using ALPR technology, including
   a. what types of data are stored for any period longer than an hour;
      ▪ License plate photos, GPS locations associated with these photos, date and time information of photos.
   b. how long data is stored;
      ▪ Per Piedmont Police Department Policy section 462.4 and Government Code 34090.6, 12 months.
   c. when data must be discarded;
      ▪ Per Piedmont Police Department Policy section 462.4 and Government Code 34090.6, 12 months.
   d. how many individual license plate scan records your agency current stores;
      ▪ 1,641,841 records as of August 8, 2012.
   e. protocols to ensure the security of the data;
      ▪ Per Piedmont Police Department Policy 462.5, all saved data will be closely safeguarded and protected by both procedural and technological means. Specifics related to safeguards and security can be found in this subsection of the ALPR policy.

5. All records regarding access to ALPR data, including
   a. the legal justification required by an individual accessing ALPR data;
      ▪ Per Piedmont Police Department Policy section 462.3 (a), an ALPR shall only by used for official and legitimate law enforcement business.
   b. purposes for which the data may be accessed;
      ▪ Per Piedmont Police Department Policy section 462.3 (b), an ALPR may be used in conjunction with any routine patrol operation or criminal investigation. Reasonable suspicion or probably cause is not required before using.
   c. purposes for which the data may not be accessed;
      ▪ Per Piedmont Police Department Policy section 462.5 (c), persons approved to access ALPR data under guidelines are permitted to access the data for legitimate law enforcement purposes only, such as when the data relates to a specific criminal investigation or department-related civil or administrative action.
   d. who may access the data, what procedures they must go through to obtain access, and who must authorize access;
      ▪ Per Piedmont Police Department Policy section 462.5 (c), persons approved to access ALPR data under guidelines are permitted to access the data for legitimate law enforcement purposes only, such as when the data relate to
a specific criminal investigation or department-related civil or administrative action. No additional authorization is required as long as the following policy conditions are met:

Piedmont Police Department Policy section 462.3 (d) states no member of this department shall operate ALPR equipment or access ALPR data without first completing department-approved training.

Piedmont Police Department Policy Section 462.3 (e) states no ALPR operator may access California Law Enforcement Telecommunications System (CLETS) data unless otherwise authorized to do so.

e. the existence or non-existence of a system that records who accesses the data and when the data is accessed;
   ▪ Per Piedmont Police Department Policy section 462.5 (b), all ALPR data downloaded to the mobile workstation and server shall be accessible only through a login/password-protected system capable of documenting all access of information by name, date and time.

6. All records regarding the sharing of data obtained through ALPR technology, including
   a. what type of data is shared;
      ▪ The Piedmont Police Department currently has no such agreements in place.
   b. which databases your agency puts collected ALPR data into;
      ▪ The Piedmont Police Department currently has no such agreements in place.
   c. third parties, governmental or private, that may access your agency’s ALPR data, including what procedure third parties must go through in order to access the data and any restrictions placed on third parties regarding further sharing of your ALPR data;
      ▪ The Piedmont Police Department currently has no such agreements in place.
   d. any agreements to share ALPR data with outside agencies, corporations or other entities;
      ▪ The Piedmont Police Department currently has no such agreements in place.

7. All records regarding obtaining ALPR data from third parties, including which databases your agency can access;
\begin{itemize}
\item None; the Piedmont Police Department has not entered into any agreement with a third party agency to share data at this time.
\end{itemize}

8. All training materials used to instruct members of your agency in ALPR deployment and use, data management, or operation of automated records systems that contain ALPR data to which any member of your agency has access, including regional or shared ALPR databases;

\begin{itemize}
\item Piedmont Police Department ALPR administrators have received in-house vendor-supplied training. This training is proprietary to the vendor and the Piedmont Police Department currently is not in possession of these documents.
\end{itemize}

Administrators have trained Piedmont Police personnel in the use of the ALPR system.

\begin{itemize}
\item At this time, the Piedmont Police Department has not entered into a regional or shared use of third party ALPR databases; therefore, no training has been conducted.
\end{itemize}

Please call if you require clarification on the information provided.

Sincerely,

Scott A. Wyatt
Interim Chief of Police

SAW:sm
Attachments
Automated License Plate Readers (ALPRs)

462.1 PURPOSE AND SCOPE
Automated License Plate Reader (ALPR) technology, also known as License Plate Recognition, provides automated detection of license plates. ALPRs are used by the Piedmont Police Department to convert data associated with vehicle license plates for official law enforcement purposes, including identifying stolen or wanted vehicles, stolen license plates and missing persons. ALPRs may also be used to gather information related to active warrants, homeland security, electronic surveillance, suspect interdiction and stolen property recovery.

462.2 ADMINISTRATION OF ALPR DATA
All installation and maintenance of ALPR equipment, as well as ALPR data retention and access shall be managed by the Support Services Division Commander. The Support Services Division Commander will assign personnel under his/her command to administer the day-to-day operation of the ALPR equipment and data.

462.3 ALPR OPERATION
Use of an ALPR is restricted to the purposes outlined below. Department personnel shall not use, or allow others to use the equipment or database records for any unauthorized purpose.

(a) An ALPR shall only be used for official and legitimate law enforcement business.

(b) An ALPR may be used in conjunction with any routine patrol operation or criminal investigation. Reasonable suspicion or probable cause is not required before using an ALPR.

(c) While an ALPR may be used to canvass license plates around any crime scene, particular consideration should be given to using ALPR-equipped cars to canvass areas around homicides, shootings and other major incidents. Partial license plates reported during major crimes should be entered into the ALPR system in an attempt to identify suspect vehicles.

(d) No member of this department shall operate ALPR equipment or access ALPR data without first completing department-approved training.

(e) No ALPR operator may access California Law Enforcement Telecommunications System (CLETS) data unless otherwise authorized to do so.

(f) If practicable, the officer should verify an ALPR response through CLETS before taking enforcement action that is based solely on an ALPR alert.

462.4 ALPR DATA COLLECTION AND RETENTION
All data and images gathered by an ALPR are for the official use of the Piedmont Police Department and because such data may contain confidential CLETS information, it is not open to public review. ALPR information gathered and retained by this department may be used and shared with prosecutors or others only as permitted by law.
Automated License Plate Readers (ALPRs)

The Support Services supervisor is responsible to ensure proper collection and retention of ALPR data, and for transferring ALPR data stored in department vehicles to the department server on a regular basis, not to exceed 30 days between transfers.

All ALPR data downloaded to the server should be stored for a minimum of one year (Government Code § 34090.6), and thereafter may be purged unless it has become, or it is reasonable to believe it will become, evidence in a criminal or civil action or is subject to a lawful action to produce records. In those circumstances the applicable data should be downloaded from the server onto portable media and booked into evidence.

462.5 ACCOUNTABILITY AND SAFEGUARDS

All saved data will be closely safeguarded and protected by both procedural and technological means. The Piedmont Police Department will observe the following safeguards regarding access to and use of stored data:

(a) All non-law enforcement requests for access to stored ALPR data shall be referred to the Captain / Support Services and processed in accordance with applicable law.

(b) All ALPR data downloaded to the mobile workstation and server shall be accessible only through a login/password-protected system capable of documenting all access of information by name, date and time.

(c) Persons approved to access ALPR data under these guidelines are permitted to access the data for legitimate law enforcement purposes only, such as when the data relate to a specific criminal investigation or department-related civil or administrative action.

(d) Such ALPR data may be released to other authorized and verified law enforcement officials and agencies at any time for legitimate law enforcement purposes.

(e) ALPR system audits should be conducted on a regular basis.
License Plate Recognition Technology

With the ever-advancing capabilities of modern computing platforms, new tools are becoming available to law enforcement professionals. Specifically, Automated Video Surveillance (AVS) technologies are now capable of extracting text from images using Optical Character Recognition (OCR) technology. The combination of OCR with advanced heuristics (algorithms) within AVS technology has evolved into License Plate Recognition (LPR) technology, which can automatically identify license plates.

LPR technology (Figure 1) automates what is normally a tedious and labor-intensive process to provide information to law enforcement professionals. For example, LPR can be used for:

- Providing a list of all vehicles in a parking lot without requiring the positioning of guards at all entry and exit points
- Speed enforcement
- Access control-gate control
- Customs/immigration checkpoints
- Tracking and traffic management

The Space and Naval Warfare Systems Center, Charleston, a SAVER Technical Agent, has published the License Plate Recognition Technology, that details how LPR works and provides more specific example applications for this automated tool.

Documents are located on the SAVER website at https://safer.fema.gov as they become available. Reports on other technology being assessed in the SAVER Program can also be found on the website.

Figure 1. License Plate Recognition Technology

![License Plate Image]
Information from DHS / FEMA SAVER Assessment of ALPR

NOTE: The report, as published by DHS / FEMA is available only to registered first responders. As such, the information presented is information that has been shared with us from a customer agency. To read the full report and validate this information, please visit https://saver.fema.gov and go to Information Technology / MediaDevices / Displays / Display,Video to download the document titled “Mobile License Plate Recognition – Assessment Report”.

Date of System Evaluation: July 2008

Overall Ratings:
Overall ratings were based on 20 different metrics falling into categories of Capability, Usability, Deployability, and Maintainability.

<table>
<thead>
<tr>
<th></th>
<th>Overall Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPS PAGIS</td>
<td>4.4</td>
</tr>
<tr>
<td>Elsag MPH-900</td>
<td>4.0</td>
</tr>
<tr>
<td>Civica Platescan</td>
<td>3.5</td>
</tr>
<tr>
<td>Vigilant Video CarDetector</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Despite PIPS and Elsag being rated as the top two solutions evaluated, there was a major difference between the two vendors in system accuracy. Had system accuracy been weighted higher (only 5% of the overall score), PIPS’ lead in the overall ratings would have been greatly extended. The same 48 plates were presented to all vendors in identical use cases, with the results as follows:

<table>
<thead>
<tr>
<th></th>
<th>Total Plates</th>
<th>Plates Captured</th>
<th>Accurate Reads</th>
<th>System Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPS</td>
<td>48</td>
<td>47</td>
<td>44</td>
<td>91.7%</td>
</tr>
<tr>
<td>Elsag</td>
<td>48</td>
<td>32</td>
<td>31</td>
<td>64.6%</td>
</tr>
</tbody>
</table>

Specific comments related to PIPS:
“Of the assessed systems, the PAGIS system received the highest overall score. Evaluator feedback highlighted the system’s ability to capture most of the license plates encountered during the assessment. The evaluators also emphasized the PAGIS system’s ability to accurately recognize target license plates during the assessment. Evaluators commented that the system’s user interface and configurable features would help them work more efficiently.”

“Evaluators frequently commented on the system’s effective performance, efficient user interface, and durable equipment.”

“The evaluators considered the system highly effective, missing 1 out of 48 possible target plate captures, while also capturing almost every non-target vehicle plate parked or driving in the areas where the scenarios were conducted. The evaluators also considered the system to be highly accurate, correctly recognizing 44 of the 47 captured target plates. Only the partially obscured plate was not captured or was incorrectly recognized, but the evaluators agreed the system recognized the obscured target plate better than they had expected.”
SYSTEM ASSESSMENT AND VALIDATION FOR EMERGENCY RESPONDERS (SAVER)

Mobile License Plate Recognition Systems Assessment Report

October 2008

FEMA

Prepared by Space and Naval Warfare Systems Center, Atlantic

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Distribution authorized to federal, state, local, and tribal government agencies only for administrative or operational use, October 2008. Other requests for this document shall be referred to the U.S. Department of Homeland Security/Federal Emergency Management Agency, IMSI Division—E Street, Attn: SAVER Program, 500 C Street SW, Washington, DC 20472.
Foreword

The Federal Emergency Management Agency (FEMA) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions. The SAVER Program conducts objective operational tests on commercial equipment and systems and provides those results along with other relevant equipment information to the emergency response community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the U.S. Department of Homeland Security's Authorized Equipment List (AEL). The SAVER Program mission includes:

- Conducting impartial, practitioner-relevant, and operationally oriented assessments and validations of emergency responder equipment.
- Providing information that enables decision makers and responders to better select, procure, use, and maintain emergency responder equipment.

Information provided by the SAVER Program will be shared nationally with the responder community, providing a life-saving and cost-saving asset to FEMA, as well as to federal, state, and local responders.

The SAVER Program is supported by a network of Technical Agents who perform assessment and validation activities. Further, SAVER focuses primarily on two main questions for the emergency responder community: "What equipment is available?" and "How does it perform?"

As a SAVER Program Technical Agent, the Space and Naval Warfare Systems Center (SPAWARSYSCEN), Atlantic, has been tasked to provide expertise and analysis on key subject areas, including communications, sensors, security, weapon detection, and surveillance, among others. In support of this tasking, SPAWARSYSCEN Atlantic conducted a comparative assessment of mobile license plate recognition systems.

Visit the SAVER Program Web site at https://saver.fema.gov for more information on the SAVER Program or to view additional reports on mobile license plate recognition systems or other technologies.
Points of Contact

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Executive Summary

Tasked by the System Assessment and Validation for Emergency Responders (SAVER) Program, the Space and Naval Warfare Systems Center (SPAWARSYSCEN), Atlantic, conducted an assessment of currently available mobile license plate recognition (LPR) systems based on criteria established by a focus group of law enforcement officers. Mobile LPR systems are permanently or temporarily mounted to a vehicle and are comprised of a suite of components, including cameras, computer hardware, software, and databases. These components work together to: 1) capture an image of a license plate, 2) recognize the license plate characters by converting the characters in the image into readable text, and 3) check the license plates against designated databases for identification. The results of this assessment are intended to help law enforcement agencies make informed decisions when procuring mobile LPR systems.

Based on product selection criteria established by the focus group, four mobile LPR systems were assessed:

- CarDetector by Vigilant Video
- Mobile Plate Hunter 900 (MPH-900) by ELSAG North America (formerly Remington ELSAG)
- PAGIS by PIPS Technology
- PlateScan by Civica Software

Law enforcement officers familiar with LPR technology evaluated each system using step-by-step procedures and simulated operational scenarios. The officers provided feedback and rated assessment criteria on a scale of 1 to 5, with 1 being least favorable and 5 being most favorable. Without endorsing any particular mobile LPR system, this document reports the product’s overall score, the average criteria ratings, and evaluator feedback for each product.

Of the assessed systems, the PAGIS system received the highest overall score. Evaluator feedback highlighted the system’s ability to capture most of the license plates encountered during the assessment scenarios. The evaluators also emphasized the PAGIS system’s ability to accurately recognize target license plates during the assessment. Evaluators also commented that the system’s user interface and configurable features would help them work more efficiently. The MPH-900 received the second highest overall score. Evaluators agreed the system would be useful to law enforcement due to its plate recognition accuracy, relative ease of use, and quick delivery of system alerts. PlateScan received the third highest overall score. Evaluators indicated that PlateScan’s simplistic graphics and logically organized user interface required minimal user interaction and enabled quick response to database matches, contributing to officer safety while driving. The evaluators also noted, however, that they would prefer the system to capture and accurately recognize license plates more frequently. CarDetector received the lowest overall score. The evaluators commented that CarDetector’s two-year warranty adds value to the system, and the compact equipment saves space in the trunk and facilitates covert operations. The evaluators agreed, however, that the CarDetector system was least likely to meet law enforcement needs due to its ineffective organization of graphics and user functions, an inability to configure system access by user, slow display of captures and alerts, and inadequate processing unit construction.
1. Introduction

License plate recognition (LPR) systems automatically identify vehicles by the information on their license plates. Checking license plates without an LPR system requires the officer to read the plate, then radio or type license plate information into a system, one plate at a time, and wait for the system to return any results. This time-consuming and labor-intensive task slows an officer’s ability to pursue the vehicle in question if warranted by the results of the license plate check.

LPR systems use cameras, computer hardware, and software to capture an image of a license plate, recognize the license plate characters by converting the characters in the image into readable text, and then check the license plate against designated databases for identification. LPR systems can scan thousands of license plates during a patrol shift or targeted mission. Some examples of law enforcement applications for LPR systems include stolen vehicle recovery, wanted felon identification, and parking enforcement.

Tasked by the U.S. Department of Homeland Security (DHS) for the System Assessment and Validation for Emergency Responders (SAVER) Program, the Space and Naval Warfare Systems Center, (SPAWARSYSCEN) Atlantic, conducted a comparative assessment of mobile LPR systems. During July 2008, four mobile LPR systems were assessed to provide information on the capabilities and limitations of these systems to emergency response agencies.

1.1 Assessment Scope

The assessment focused on mobile LPR systems for U.S. law enforcement applications. The assessment was structured according to criteria and operational scenarios identified by a focus group of law enforcement officers who use mobile LPR systems. For more information about the focus group, refer to the Mobile License Plate Recognition Focus Group Recommendations, which can be found on the SAVER Web site at https://saver.fema.gov.

Generally, there are two types of LPR systems—fixed and mobile. Fixed systems are permanently mounted on stationary structures, such as poles or walls. In contrast, mobile systems are either permanently or temporarily mounted on a vehicle.

1.2 Evaluator Demographics

Four law enforcement officers, all experienced mobile LPR system users, served as the evaluators. Table 1-1 provides the evaluators’ background information.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Years of Experience</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officer</td>
<td>9</td>
<td>Georgetown Police Department, SC</td>
</tr>
<tr>
<td>Officer</td>
<td>13</td>
<td>North Charleston Police Department, SC</td>
</tr>
<tr>
<td>Sergeant</td>
<td>15</td>
<td>Long Beach Police Department, CA</td>
</tr>
<tr>
<td>Sergeant</td>
<td>24</td>
<td>Miami-Dade Police Department, FL</td>
</tr>
</tbody>
</table>
1.3 Assessment Products

The nine mobile LPR systems described in the *Mobile License Plate Recognition Systems Market Survey Report* were considered for this assessment. The products were compared as complete systems of cameras, software, processors, and displays in order to keep comparison between products consistent and relative. Although vendors offered data management server hardware and software for data mining, analysis, and investigations, it was not part of the image capture, processing, and matching process and therefore not assessed. The systems were scored and selected for the assessment according to how well each product met the focus group’s product selection criteria described in the *Mobile License Plate Recognition Systems Focus Group Recommendations*. Product information used for comparison with product selection criteria was obtained directly from vendor responses to a Federal Business Opportunity (FedBizOpps) Request For Information (RFI).

The following mobile LPR systems were assessed based on product selection scoring:

- CarDetector by Vigilant Video
- Mobile Plate Hunter 900 (MPH-900) by ELSAG North America (formerly Remington ELSAG)
- PAGIS by PIPS Technology
- PlateScan by Civica Software

1.4 Authorized Equipment List

Local jurisdictions use the DHS Authorized Equipment List (AEL) guidelines to comply with federal grant requirements in their selection of equipment for procurement. DHS directs state and local responders to refer to specific program guidelines for the list of authorized equipment eligible for purchase through that particular grant program. AEL reference number 14SW-01-SIDV, from the AEL dated January 17, 2008, pertains to systems for vehicle identification.
2. Assessment Criteria

The SAVER Program assesses products based on criteria in five established categories:

- **Affordability** — Criteria related to life cycle costs of a piece of equipment or system.
- **Capability** — Criteria related to the power, capacity, or features available for a piece of equipment or system to perform one or more responder relevant tasks.
- **Deployability** — Criteria related to the movement, installation, or implementation of a piece of equipment or system by responders at the site of its intended use.
- **Maintainability** — Criteria related to the maintenance and restoration of a piece of equipment or system to operational conditions by responders.
- **Usability** — Criteria related to the quality of the responders' experience with the operational employment of a piece of equipment or system. This includes the relative ease of use, efficiency, and overall satisfaction of the responders with the equipment or system.

The focus group identified, defined, and categorized 39 mobile LPR system assessment evaluation criteria within the five SAVER Program categories. The focus group then assigned a weight for each criterion's level of importance on a scale of 1 to 5, with 1 being somewhat important and 5 being of utmost importance. Once the criteria were weighted, the five SAVER Program categories were assigned a percentage value to represent each category's level of importance relative to the other categories.

Products were assessed according to 20 of the 39 assessment criteria within four SAVER Program categories. The remaining criteria, including all the criteria in the affordability category, were not assessed, as noted in Table 2-1, because they are agency-specific or information needed for the assessment was not available. Refer to Appendix A for the assessment criteria definitions provided by the focus group.
<table>
<thead>
<tr>
<th><strong>Table 2-1 Assessment Criteria</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAVER PROGRAM CATEGORIES</strong></td>
</tr>
<tr>
<td><strong>Affordability</strong></td>
</tr>
<tr>
<td>Overall Weighting</td>
</tr>
<tr>
<td>31%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Evaluation Criteria</strong></th>
<th><strong>Initial System Cost</strong></th>
<th><strong>Ongoing Maintenance Costs</strong></th>
<th><strong>Cost of Optional Equipment</strong></th>
<th><strong>Cost of Required Software/Hardware</strong></th>
<th><strong>Volume Discount</strong></th>
<th><strong>Speed Differential</strong></th>
<th><strong>Multiple Database Query</strong></th>
<th><strong>Location Detection</strong></th>
<th><strong>Manual Database Entry</strong></th>
<th><strong>System Security</strong></th>
<th><strong>Statistic Reporting</strong></th>
<th><strong>Database Management Software Availability</strong></th>
<th><strong>Data File Formats Supported</strong></th>
<th><strong>Configurable Images</strong></th>
<th><strong>Database III</strong> Notifications</th>
<th><strong>System Power Consumption</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not Assessed</strong></td>
<td><strong>- System Accuracy</strong></td>
<td><strong>Weight: 5</strong></td>
<td><strong>Alert Time</strong></td>
<td><strong>Weight: 5</strong></td>
<td><strong>Plate Reading Conditions</strong></td>
<td><strong>Weight: 5</strong></td>
<td><strong>Field of View</strong></td>
<td><strong>Not Assessed</strong></td>
<td><strong>Operating System Compatibility</strong></td>
<td><strong>Not Assessed</strong></td>
<td><strong>Training</strong></td>
<td><strong>Not Assessed</strong></td>
<td><strong>Weight: 4</strong></td>
<td><strong>Not Assessed</strong></td>
<td><strong>Not Assessed</strong></td>
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3. Assessment Methodology

Evaluators assessed one product per day. Before beginning the assessment each day, an overview of the system to be assessed and training were provided by the vendor. The assessment was conducted as follows:

- **Equipment/Feature Assessment:** Before, during, and after the performance assessment, evaluators assessed products using criteria related to equipment practicality and user functions.
- **Performance Assessment:** Evaluators assessed products in three operational scenarios using criteria related to performance effectiveness.

After completing the assessment activities for a product, evaluators rated the product according to the assessment criteria on a scale from 1 (least favorable) to 5 (most favorable), and provided written and verbal feedback.

### 3.1 System Configuration

Vendors were required to provide all system components installed on a Ford Crown Victoria or a vehicle with a similar profile for the assessment. Prior to the assessment, each participating vendor was provided with information to ensure their system was configured according to the assessment criteria and consistent with the other assessed systems. Specifically vendors were provided with:

- Target plate-mounting location on vehicle rear.
- Scenario fields of view and descriptions (See Section 3.2).
- Issuing state for the target plates (See Section 3.2).
- A mock license plate data file containing license plate records for the target vehicles and instructed to have the file loaded on the system upon arrival at the assessment site.

In addition, vendors were encouraged to equip their system with GPS tracking on a visual map, an optional capability for many systems.

### 3.2 Assessment Execution

To conduct the assessment, evaluators were provided with step-by-step procedures to ensure consideration was given to each assessment criterion. For the equipment/feature assessment, evaluators used the procedures to examine the system’s equipment and navigate the user interface.
For the performance assessment, products were evaluated in the following three real-time scenarios, representing operational environments recommended by the focus group:

- **Patrolling Parking Lot**: Patrolling at a slow speed (5 to 10 miles per hour), the systems targeted vehicles parked at a 90 degree angle on the passenger side.
- **Monitoring Heavy, High Speed Traffic**: Parked on a highway shoulder, the systems targeted passing traffic (50 to 60 miles per hour) on the driver’s side.
- **Patrolling Two-Lane Highway**: Patrolling at a moderate speed (45 to 55 miles per hour), the systems targeted oncoming traffic on the driver’s side.

Each scenario was performed four times, giving each evaluator an opportunity to interact directly with the system. Four vehicles with the following plate types were staged as targets in each scenario:

- Pennsylvania – reflective background, raised characters
- South Carolina – reflective background, raised characters
- South Carolina – reflective background, non-raised characters (i.e., a flat plate)
- South Carolina – reflective background, raised characters, two characters partially obscured with black tape

### 3.3 Data Collection Analysis

Using the evaluators’ ratings, an overall product score was calculated for each product based on the assessment criteria and SAVER category weights established by the focus group. Refer to Appendix B for the methodology used to calculate the overall product scores. Evaluators’ written and verbal feedback about each product was analyzed for pros, cons, and trends.
4. Assessment Results

Of the assessed systems, the PAGIS system received the highest overall score. Evaluator feedback highlighted the system’s ability to capture most of the license plates encountered during the assessment. The evaluators also emphasized the PAGIS system’s ability to accurately recognize target license plates during the assessment. Evaluators also commented that the system’s user interface and configurable features would help them work more efficiently.

The MPH-900 received the second highest overall score. Evaluators agreed the system would be useful to law enforcement due to its plate recognition accuracy, relative ease of use, and quick delivery of system alerts.

PlateScan received the third highest overall score. Evaluators indicated that PlateScan’s simplistic graphics and logically organized user interface required minimal user interaction and enabled quick user response to database matches, contributing to officer safety while driving. The evaluators also noted, however, that they would prefer the system to capture and accurately recognize license plates more frequently, adding that they would forego the efficient user interface in lieu of improved recognition accuracy and a higher rate of plate captures.

CarDetector received the lowest overall score. The evaluators commented that CarDetector’s two-year warranty adds value to the system, and the compact equipment saves space in the trunk and facilitates covert operations. The evaluators agreed, however, that the CarDetector system was least likely to meet law enforcement needs due to its ineffective organization of graphics and user functions, an inability to configure system access by user, slow display of plate captures and alerts, and inadequate processing unit construction.

Throughout the assessment of all products, the weather conditions were mostly sunny. The evaluators agreed that none of the resulting glare and shadows encountered seemed to impact the capture and recognition performance of any of the products.

Table 4-1 displays the overall score for each assessed product from highest to lowest. Table 4-2 represents the average criteria ratings for each product within each assessed SAVER category. Specifications for the assessed equipment are listed in Table 4-3.
# Table 4-2 Average Criteria Ratings

<table>
<thead>
<tr>
<th>KEY</th>
<th>System Accuracy</th>
<th>Alert Time</th>
<th>Plate Reading Conditions</th>
<th>Speed Differential</th>
<th>Multiple Database Query</th>
<th>Location Detection</th>
<th>Manual Database Entry</th>
<th>System Security</th>
<th>Statistic Reporting</th>
<th>Configurable Images</th>
<th>Visual Display</th>
<th>Alert Information</th>
<th>User Friendly Interface</th>
<th>Character Estimation</th>
<th>Ease of Startup and Shutdown</th>
<th>Processing Unit Durability</th>
<th>Camera Durability</th>
<th>Camera Size</th>
<th>Processing Unit Size</th>
<th>Warranty</th>
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<tbody>
<tr>
<td></td>
<td>PAGIS</td>
<td>MPII-900</td>
<td>PlateSenn</td>
<td>CarDetector</td>
<td>PAGIS</td>
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Assessment Results

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The following sections, broken out by SAVER categories, present the evaluators' written and verbal feedback.

### Capability

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### Table 4-3 Key Specifications of Assessed Systems

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<tbody>
<tr>
<td>Cost of Equipment and Software (as of July 2008)</td>
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*Includes three cameras for mounting on a light bar and one camera for mounting to the inside of the rear window.

The dimensions are for a junction box, which supplies power to the cameras and connectivity from the cameras to the user interface computer.

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</tr>
<tr>
<td>User Interface Computer Hardware (Not Included in Cost)</td>
<td>Dashboard-Mounted Touch-Screen Monitor</td>
<td>Dashboard-Mounted Touch-Screen Monitor and Keyboard</td>
<td>Dashboard-Mounted Touch-Screen Monitor</td>
<td>Non-Mounted Laptop w/Touch-Screen</td>
</tr>
</tbody>
</table>

*Includes three cameras for mounting on a light bar and one camera for mounting to the inside of the rear window.

The dimensions are for a junction box, which supplies power to the cameras and connectivity from the cameras to the user interface computer.
As part of the assessment, evaluators felt that the combined time for plate capture, recognition, checking databases, and delivering alerts was fast, allowing officers to quickly validate an alert and, if necessary, pursue the vehicle in question.

The PAGIS system allowed users to manage multiple data files as individual databases, which the evaluators felt provided flexibility for managing unique data sets. More specifically, the evaluators found the ability to enable and disable all or some of the databases, as well as the ability to prioritize the databases for searches and alerts, to be useful. System administrators can track and restrict user access to the system and various features by establishing user names and passwords, a process the evaluators found to be easy and useful.

The evaluators also found manually entering license plates to be easy, although one evaluator would have preferred fewer steps in the process. The PAGIS system does not allow users to adjust image resolution or file size, but the evaluators indicated that adjustable image resolution would be useful. The PAGIS system tracks the latitude and longitude where every plate capture occurs; however, the evaluators indicated location coordinates would be most useful if displayed on a map. Mapping software that displays the coordinates on a map can be integrated with the PAGIS system, but was not installed with the assessed system. One evaluator favored the system's ability to report on a user-defined text field, while others would have preferred in-car reporting to include a wider selection of statistics to choose from than what was available.

**Usability**

The evaluators agreed the PAGIS system suited their usability needs. They felt that the interface provided features officers need to determine alert responses with minimal distraction from driving. Of particular note was the ability to select the color and data displayed for alerts based on record type. For example, a stolen vehicle alert can be one color and a stolen plate alert can be a different color. In addition, the evaluators found the system's user interface to be uncluttered, well-organized, and easy to use. Some evaluators, however, felt functions could be completed with fewer steps. All of the evaluators agreed that the PAGIS system started up and shut down quickly and found the “hello” and “goodbye” audible indicators helpful in confirming the completion of both actions.

**Deployability**

Overall, the evaluators felt that the PAGIS system met their deployability needs. Although the processing unit occupied too much space in the trunk, the evaluators agreed the unit was sufficiently sealed and mounted for protection against extreme temperatures and jostling during high-speed driving. In addition, some evaluators noted that the cameras interfered slightly with the light bar; however, they liked that the cameras were small enough to be somewhat inconspicuous. The evaluators agreed that the cameras appeared to be sufficiently durable to withstand environmental conditions.

**Maintainability**

The PAGIS one-year warranty was considered by the evaluators to be sufficient and consistent with industry standards.
4.2 Mobile Plate Hunter 900 (MPH-900) by ELSAG North America

The MPH-900 system received the second highest overall score, 4.0. On average, the evaluators agreed that the system's performance, features, and equipment made it a useful law enforcement tool. The MPH-900 was installed on a Ford Crown Victoria and was configured with a dashboard-mounted touch-screen monitor with keyboard and three cameras mounted on the trunk. Each camera had an integrated processing unit.

The following sections, broken out by SAVER categories, present the evaluators’ written and verbal feedback.

Capability

Overall, evaluator feedback regarding the MPH-900’s capabilities was favorable. Although the MPH-900 missed 16 out of 48 possible target plate captures, the evaluators noted that the system correctly recognized 31 of the 32 plates the system was able to capture. The evaluators indicated they would prefer a higher rate of plate captures, but considering all the missed plates were atypical plate types (flat or with partially obscured characters), the evaluators felt the system performance was acceptable. The evaluators determined the combined time for plate capture, recognition, checking databases, and delivering alerts was fast enough for officers to pursue a vehicle in question, if necessary.

The evaluators felt the MPH-900 would be more useful if users could customize alerts and enable, disable, and prioritize multiple databases. Some evaluators felt the system’s login and password setup offered sufficient administrative control, while others wanted a greater level of control for assigning and limiting user access. Finding the navigation to and from the manual plate entry screen cumbersome, some evaluators suggested the task would be simpler if done in a pop-up window accessible while conducting other tasks, such as plate searches. Although the MPH-900 records latitude and longitude of vehicles when their plates are captured, the evaluators indicated that location coordinates are of little use to officers in the car unless displayed on a map. A feature for displaying coordinates on a map was not available at time of assessment. The evaluators indicated that the ability to generate reports from the mobile unit was sufficient, but they would have preferred a wider selection of statistics on which to report.

Usability

The evaluators generally agreed that the MPH-900 was suited for their usability needs. Evaluator comments regarding alerts were mixed. While evaluators found the spoken alarm type and the data presented with alerts to be useful, most indicated they would prefer more options for distinguishing alert types from one another. The evaluators indicated that the ability to adjust the brightness and contrast of the visual display was helpful. They added that the visual display would be more useful if views from multiple cameras could be displayed. In addition, evaluators would prefer the captured license plate image and corresponding system-read plate characters to be displayed more logically in relation to each other. The evaluators felt that the system’s features were somewhat easy to use; however, they agreed that officers could work more
efficiently if fewer steps were required to perform functions and the buttons were more logically organized on the screen. Although all the evaluators agreed that the MPH-900 started up and shut down quickly, one evaluator would have preferred the software to automatically start when the car is started, noting that the MPH-900 icon was difficult to locate on the dashboard mounted touch screen.

**Deployability**
Overall, the evaluators felt that the MPH-900 met their deployability needs. Evaluator opinions varied widely regarding the camera-integrated processing units. Some of the evaluators favored not having to use trunk space to store the processing units, while others were concerned that the obtrusive camera size, due to the integration of a processing unit, would prohibit covert operations. Some evaluators also noted that the space savings in the trunk had little significance, because the MPH-900 requires a junction box to be mounted in the trunk. The junction box supplies power to the cameras and connectivity from the cameras to the user interface computer. One evaluator cited concerns that the processing units, although enclosed in the camera housings, might be more exposed to weather outside the trunk than they would if mounted inside the trunk. Although the evaluators perceived the cameras fastened to the vehicle's trunk to be highly durable, the evaluators noted that the cameras' magnetic mounting harnesses and wires might be targets for vandals.

**Maintainability**
The MPH-900 one-year warranty was considered by the evaluators to be sufficient and consistent with industry standards.

### 4.3 PlateScan by Civica Software
The PlateScan system scored third overall, 3.5. The evaluators frequently commented that PlateScan was easy to use; however, they felt the system did not capture or accurately recognize as many plates as they would have preferred. The system was installed on a Ford Crown Victoria and was configured with a dashboard-mounted touch-screen monitor, a trunk-mounted processing unit, three light bar-mounted cameras, and a camera inside the rear window. The light bar-mounted camera model the vendor provided for the assessment is being replaced with a different model for current and future installations, which prompted the evaluators to express concern that evaluation of this system would be limited in relevance.

The following sections, broken out by SAVER categories, present the evaluators' written and verbal feedback.

**Capability**
Overall, the evaluators considered PlateScan’s capabilities to be acceptable. The PlateScan system missed 14 out of 48 possible target plate captures and correctly recognized 27 out of the...
34 plates that were captured. The evaluators noted that the system was inconsistent in its ability to capture and accurately recognize target plates.

The PlateScan system functions with multiple databases. The evaluators found this capability to be advantageous for helping officers easily identify a record type when the system generates an alert for a captured plate matching that record. Most of the evaluators, however, indicated they would prefer to have the additional capability to enable, disable, prioritize, and search individual databases. The evaluators found manually entering license plates to be easy. They found PlateScan's lack of user setup options prohibitive for controlling user access. The evaluators felt that PlateScan delivered fuzzy vehicle overview and plate images and commented that it would be helpful if the system had features that allowed users to adjust image resolution. One evaluator noted fuzzy images made it difficult to identify the plate's issuing state, which is critical to verifying system alerts. As with the other assessed systems, the evaluators found PlateScan's ability to record latitude and longitude of each plate capture location to be limited without a map display, which is not available for the user interface. The evaluators indicated that the system's reporting options were only marginally useful because the system does not track user statistics, and the user interface does not allow users to save report results.

**Usability**

The evaluators generally agreed that the PlateScan system was suited for their usability needs. Evaluator comments about PlateScan's user-interface were very positive, highlighting its exceptional ease of use, simplistic and logically organized graphics (e.g., buttons for user functions), and flexible sound control for alerts. Specific to camera views, the evaluators found the ability to select the number of camera views displayed and the ability to select the viewing mode (i.e., video, still, or infrared) for each camera view to be useful. Although the PlateScan system started up automatically when the computer was powered on, the evaluators agreed that startup was slower than they would prefer.

**Deployability**

Overall, the evaluators felt that PlateScan met their deployability needs. Although the evaluators agreed that the processing unit was mounted securely enough to keep it restrained during high-speed travel and sharp turns, there was concern that the size of the processing unit occupied too much trunk space. Most of the evaluators perceived the cameras to be durable enough to withstand outdoor environmental conditions; however, the general consensus was that the cameras interfere with the light bar and are large enough to draw unwanted attention.

**Maintainability**

PlateScan's one-year warranty was considered by the evaluators to be sufficient and consistent with industry standards.
4.4 CarDetector by Vigilant Video

The CarDetector scored fourth overall, 3.1. Although the CarDetector was considered to have good reporting capabilities and compact equipment, the evaluators indicated this product had poor picture quality and was cumbersome to operate. The system was installed on a Cadillac DTS and was configured with two roof-mounted cameras, a trunk-mounted processing unit for the cameras, and a free-standing touch-screen laptop computer, which also served as the processing unit for the database and user interface software.

The following sections, broken out by SAVER categories, present the evaluators’ written and verbal feedback.

Capability

Overall, the evaluators considered the CarDetector system’s capabilities to be acceptable. The system missed 9 out of 48 possible target plate captures, all of which were the partially obscured plate. The system correctly recognized 35 of the 39 target plates that were captured. Although most of the evaluators felt the system’s recognition accuracy and ability to capture plates was acceptable, they found the combined time for plate capture, recognition, and alert to be too slow. For every captured plate, CarDetector attempted recognition multiple times and displayed data and images from each attempt on the user interface screen. The evaluators noted that the activity was distracting.

The evaluators felt the CarDetector would be more useful if users could customize alerts and enable, disable, and prioritize multiple databases. The CarDetector system can establish user identification by badge number for reporting purposes, but not for limiting user access. The evaluators preferred to be able to customize user access to certain features of the system. The evaluators reported that manual database entry was easy to use, but the on-screen keyboard was too small for fast input. The evaluators indicated that the image quality of the displayed plate captures was fuzzy. Evaluators would have preferred that the CarDetector have image adjustment features to improve readability of the captured plates. As with the other assessed systems, the evaluators found CarDetector’s ability to record latitude and longitude of each plate capture location to be only somewhat useful without a map display, which is not available for the user interface. The evaluators agreed that the CarDetector reporting feature was highly useful, particularly the available statistics and the plate and vehicle pictures embedded in reports.

Usability

The evaluators generally found the CarDetector system was not well suited for their usability needs, emphasizing slow system startup, distracting visual display, poor image quality, and cumbersome operational tasks. In particular, the evaluators reported that the main screen was cluttered with graphics, features, and data, which they found distracting and unnecessary for critical tasks, such as monitoring the captures and responding to alerts for recognized plates. The evaluators found that accomplishing common tasks, such as configuring alerts, required too much navigation and took more time than they found desirable. In addition, the evaluators found
alert delivery to be slow and the order of images, data, and sound delivered with alerts to be confusing.

**Deployability**

The evaluators agreed that the CarDetector system was adequate for their deployability needs. They commented favorably on the low profile shape of the cameras since they did not interfere with the light bar and were somewhat inconspicuous. The evaluators also liked the compact size of the trunk-mounted processing unit for preserving trunk space. The durability of the processing unit was considered by the evaluators to be insufficient because it did not have a protective covering. The evaluators felt that the exposed wires and other vital parts of the unit could be easily damaged by extreme temperatures or by other equipment commonly stored in the trunk. The durability of the cameras was considered by the evaluators to be sufficient, but they felt measures should be taken to protect cameras from theft or detaching from the vehicle at high speeds.

**Maintainability**

The CarDetector's two-year warranty was considered by the evaluators to be well above industry standards.
5. Conclusion

Representatives from the law enforcement community evaluated four mobile LPR systems. The PAGIS system by PIPS Technology scored the highest, followed by MPH-900 by ELSAG North America, and PlateScan by Civica Software. CarDetector by Vigilant Video received the lowest score.

Throughout the assessment, evaluators stated that, most importantly, a mobile LPR system should accurately recognize license plates and have a user interface with clear images and intuitive, quick access to alert verification features. They also felt that a mobile LPR system should have effective organization of graphics and user features, ability to configure user access rights, fast captures and alerts, and durable hardware.

Evaluator feedback highlighted the following recommendations for law enforcement agencies procuring mobile LPR systems:

- Compare various systems on the market.
- Visit law enforcement agencies currently using LPR systems to draw on their experiences with the system and with the vendor.
- Determine the vendor’s ability and intention to support purchased systems.

Emergency responder agencies considering adding mobile LPR systems to their current set of resources should carefully consider each product’s overall capabilities and limitations when considering the unique needs of their jurisdiction.
# Appendix A: Assessment Criteria Descriptions

<table>
<thead>
<tr>
<th>Assessment Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Affordability</strong></td>
<td></td>
</tr>
<tr>
<td>Initial System Cost</td>
<td>The base system purchase price, including all vendor-provided equipment and services necessary for the system to be fully operational. The initial system cost must include complete and successful system implementation.</td>
</tr>
<tr>
<td>Ongoing Maintenance Costs</td>
<td>The cost of maintaining the system after the installation or after the warranty period has ended. These costs include technical support, training, cleaning and replacing parts, and system upgrades.</td>
</tr>
<tr>
<td>Cost of Optional Equipment</td>
<td>The cost of equipment for enhancing the base system's capability and performance, not included in the base system purchase price. Examples of optional equipment, typically the vendor's proprietary products, include additional cameras, mounts for alternative camera mounting, and database management software.</td>
</tr>
<tr>
<td>Cost of Required Software/Hardware</td>
<td>The cost of any software or hardware required to meet an LPR system's operational requirements, not included in the base system purchase price. Examples include a server to support database management software, database software such as SQL to support the system's database, or equipment to support connectivity between a server and system-equipped vehicles.</td>
</tr>
<tr>
<td>Volume Discount</td>
<td>Vendor-offered discounts with the purchase of multiple units.</td>
</tr>
<tr>
<td><strong>Capability</strong></td>
<td></td>
</tr>
<tr>
<td>System Accuracy</td>
<td>The ability of the software to accurately identify license plate codes captured by the cameras and provide accurate database matches. If a system returns inaccurate information, a plate could be missed or the wrong vehicle could be pursued.</td>
</tr>
<tr>
<td>Alert Time</td>
<td>The combined time a system takes to capture a plate, perform the recognition process, check records for matching plates, and display a match. A system must process captured plates and alert users to database matches quickly enough to apprehend the target vehicle.</td>
</tr>
<tr>
<td>Plate Reading Conditions</td>
<td>The various conditions under which a system can effectively read plates. A system should read plates in all lighting conditions and in adverse weather without degradation. For this assessment the weather conditions were mostly sunny.</td>
</tr>
<tr>
<td>Field of View</td>
<td>An area in which a camera is configured to capture vehicle plates (e.g., parked cars on the right or oncoming traffic). A system should be configured with enough cameras to capture plates in multiple fields of view.</td>
</tr>
<tr>
<td>Operating System Compatibility</td>
<td>The ability of a system's software to be compatible with an onboard mobile computer's existing operating system (e.g., Windows operating system).</td>
</tr>
<tr>
<td>Assessment Criteria</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Speed Differential</td>
<td>The combined traveling speed of an equipped vehicle and a target vehicle. A system should have the ability to effectively capture and recognize plates when either the equipped or the target vehicle is traveling at high speeds or when both of them are traveling at high speeds.</td>
</tr>
<tr>
<td>Multiple Database Query</td>
<td>A system’s ability to search multiple databases for plate matches. Multiple local, regional, and national agency databases contain license plate and crime information, and many agencies create their own targeted databases, such as those containing information about sexual predators or stolen vehicle hot lists.</td>
</tr>
<tr>
<td>Location Detection</td>
<td>A system’s ability to log the latitude and longitude coordinates of every captured license plate. This feature tracks the travel path of wanted vehicles. Location coordinates are more useful when they are displayed graphically.</td>
</tr>
<tr>
<td>Processing Unit Networkability</td>
<td>The computer processing unit’s ability to be connected to a network. A system’s processing unit should be capable of connecting to a network via multiple methods (e.g., USB drives, wireless broadband, and cellular) to send and receive database information. The flexibility to work with multiple connectivity options allows an agency to implement more effective network connectivity as budget constraints allow.</td>
</tr>
<tr>
<td>Manual Database Entry</td>
<td>A user’s ability to type license plate information into the system to search for vehicles on-the-fly (e.g., AMBER Alerts and apprehending persons fleeing crime scenes). Manual plate entry is also used for entering correct plate information when users discover a captured plate has been misread.</td>
</tr>
<tr>
<td>System Security</td>
<td>Features agencies can set or customize to safeguard against certain actions. Examples include features that can be set to require user logon and password and that can be configured to limit user privileges to certain system functions.</td>
</tr>
<tr>
<td>Statistic Reporting</td>
<td>A user’s ability to produce reports directly from the mobile unit. A system should give users the ability to select data on which to report. Reports such as user shift activity, user actions taken on alerts, and activity per license plate are useful.</td>
</tr>
<tr>
<td>Database Management Software</td>
<td>Vendor-offered, proprietary database management software that agencies can use to manage (e.g., merge, prioritize, query, and report on) database files. The group agreed that, depending on an agency’s size, budget, and number of vehicles with installed systems, database management software could be used to enhance operations, demonstrating a more significant return on investment.</td>
</tr>
<tr>
<td>Data File Formats Supported</td>
<td>Industry-standard data file formats supported by an LPR system.</td>
</tr>
<tr>
<td>Configurable Images</td>
<td>A user’s ability to configure the size and resolution of captured images. Reducing image size could alleviate issues with transferring data to and from database servers, as well as database storage issues.</td>
</tr>
<tr>
<td>Database Hit Notifications</td>
<td>A system’s ability to support sending text, e-mail, and phone notifications about certain captured data to remote recipients (e.g., working with outside agencies to perform a particular investigation).</td>
</tr>
<tr>
<td>System Power Consumption</td>
<td>The amount of power required to operate a system’s equipment, such as the cameras and processing unit.</td>
</tr>
<tr>
<td>Usability</td>
<td></td>
</tr>
<tr>
<td>Visual Display</td>
<td>The information and graphics that are displayed by the LPR software, how they are organized and accessed, and an agency’s ability to configure the display.</td>
</tr>
<tr>
<td>Alert Information</td>
<td>An agency’s ability to configure how alerts appear and sound, how they are categorized, and how the associated information is displayed.</td>
</tr>
</tbody>
</table>
## Appendix A: Definition of Assessment Criteria

<table>
<thead>
<tr>
<th>Assessment Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Friendly Interface</td>
<td>A system's user interface that enables users to respond quickly to database matches by requiring minimal clicks and intuitive access to user actions.</td>
</tr>
<tr>
<td>Character Estimation</td>
<td>A system's ability to make a logical determination about plates that have some obscured characters and display the possible license plate codes, clearly noting that they have been estimated. This criterion is sometimes referred to as fuzzy logic.</td>
</tr>
<tr>
<td>Ease of Startup and Shutdown</td>
<td>A system's ability to start up and shut down quickly with minimal or no user intervention.</td>
</tr>
<tr>
<td>Training</td>
<td>Vendor-provided training and training aids.</td>
</tr>
<tr>
<td><strong>Deployability</strong></td>
<td></td>
</tr>
<tr>
<td>Integration with Existing Car Systems</td>
<td>A system's ability to integrate with existing car computer systems (e.g., onboard mobile computer) and associated electrical system connections. This criterion refers to core computer system integration and is different from integration with in-car cameras, which would be used to capture additional plates.</td>
</tr>
<tr>
<td>Processing Unit Durability</td>
<td>A processing unit's ability to withstand extreme weather and rugged handling, especially when the unit is located in the vehicle trunk.</td>
</tr>
<tr>
<td>Camera Durability</td>
<td>A camera's ability to withstand direct weather exposure.</td>
</tr>
<tr>
<td>Camera Size</td>
<td>A camera's potential to interfere with other equipment, such as a light bar, due to the camera size. For covert operations, camera size may also be a consideration.</td>
</tr>
<tr>
<td>System Portability</td>
<td>A temporarily mounted system's ease of setup and removal and a permanently mounted system's ability to be removed from an old car without degradation and be preserved for installation on a new car.</td>
</tr>
<tr>
<td>Camera Mounting</td>
<td>Camera mounting apparatus that ensures cameras are safely attached to the vehicle and do not interfere with existing equipment.</td>
</tr>
<tr>
<td>Processing Unit Size</td>
<td>A processing unit's potential to interfere with other equipment and occupy areas in the vehicle where available space is limited.</td>
</tr>
<tr>
<td>Integration with In-Car Cameras</td>
<td>A system's ability to capture an additional set of plate images with an in-car camera can be advantageous; however, an in-car camera's limited ability to provide high quality images necessary for recognition and the reduced recognition speed that may result from analyzing an additional set of images is a potential disadvantage.</td>
</tr>
<tr>
<td><strong>Maintainability</strong></td>
<td></td>
</tr>
<tr>
<td>Customer Support</td>
<td>A vendor's commitment to provide support to an agency for successful system implementation and throughout the duration of the agency's ownership of the system.</td>
</tr>
<tr>
<td>Warranty</td>
<td>A vendor-offered warranty that covers all equipment, parts, software, and any associated labor.</td>
</tr>
<tr>
<td>Backwards Compatibility</td>
<td>Vendor assurance that new software versions will be compatible with existing operating systems, software, and equipment.</td>
</tr>
</tbody>
</table>
Appendix B: Score Calculation Methodology

Using the evaluators' ratings, the overall score for each product was calculated based on the assessment criteria and SAVER category values established by the focus group. The process for determining overall product scores began with calculating an average rating for each criterion by summing the ratings provided by each of the evaluators and dividing it by the number of responses. A weighted SAVER category score for each product was also calculated by multiplying the average criteria rating by the assigned weight. The sum of the weighted average scores in a category was divided by the sum of the maximum product scores in the category to arrive at the category score, as seen in the formula below. The percentage result was then normalized to represent the category score on a 1 to 5 scale.

\[
\text{Category Score} = \frac{\sum (\text{Average Criteria Rating} \times \text{Weight for Each Criteria})}{\sum (\text{Max Product Rating} \times \text{Weight for Each Criteria})}
\]

Using the PIPS Technology PAGIS system as an example, the following formula demonstrates how the deployability category score was calculated.

\[
\frac{(4.75 \times 5)+(4.25 \times 5)+(4.25 \times 3)+(3.75 \times 2)}{(5 \times 5)+(5 \times 5)+(5 \times 3)+(5 \times 2)} = 87\% \text{ or } 4.4 \text{ (on 1 to 5 scale)}
\]

To determine the overall score for each product, each category score was multiplied by the category percentage value. The results for each category were summed to arrive at the overall product score as seen in the formula below. Percentage values originally assigned to the five SAVER categories by the focus group were normalized to total 100% because the affordability category was excluded from this assessment.

\[
\text{Overall Product Score} = \sum (\text{Category Score} \times \text{Category Percentage})
\]

Using the PIPS Technology PAGIS system as an example, the following formula demonstrates how the overall assessment score for the product was calculated.

<table>
<thead>
<tr>
<th>Capability</th>
<th>Usability</th>
<th>Deployability</th>
<th>Maintainability</th>
<th>Total Product Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4.5 x 42%)</td>
<td>(4.6 x 29%)</td>
<td>(4.4 x 19%)</td>
<td>(3.5 x 10%)</td>
<td>4.4</td>
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This process was repeated for each of the remaining products.
OPEN PURCHASE ORDER
Coding and Approval Apron

DATE 3/30/10
VENDOR NAME FEDERAL SIGN
OPEN P.O. NUMBER 04925 (ATTACHED)
DEPARTMENT APPROVAL APR 08 2010
FINANCE APPROVAL

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FEDERAL SIGNAL CORP.
Advancing Security and Well-being

PIPS Technology
804 Innovation Drive
Knoxville, TN 37932-2562

INVOICE

Send Payments To:
PIPS Technology Inc
C/O Bank of America
15027 Collection Center Drive
Chicago, IL 60693

Bank of America Chicago, IL
Acct No. 1233062483
ABA No. 0260-0959-3

WIRE TRANSFERS to:

Billing/Credit Inquiry: (865)-392-5540
Fax: (865)-392-5599

Invoice No. 7063
Invoice Date 03-23-10
Our Order No. 3790

SOLD TO: 1438
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120 VISTA AVE.
ATTN: ACCOUNTS PAYABLE
PIEDMONT, CA 94611

SHIPPING COST

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<td>1</td>
<td>PIPS-TSMON G-NET MONITOR AND CABLES</td>
<td>1775.00</td>
<td>1,775.00</td>
</tr>
<tr>
<td>4</td>
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<td>1</td>
<td>AV06BOSS02USER BOSS BLOCK OF 2</td>
<td>995.00</td>
<td>995.00</td>
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<tr>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>FREIGHT - SHIPPING COST</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

If you wish to receive your invoices via email please respond to: slakins@federalsignal.com

SUB-TOTAL 19,420.00
TAXES 1,883.72
SHIPPING & HANDLING 0.00

INVOICE TOTAL 21,303.72

19,420.00
1,883.72
0.00
21,303.72

PIPS TECHNOLOGY INC.
C/O Bank of America
15027 Collection Center Drive
Chicago, IL 60693

FEDERAL SIGNAL CORP.
Advancing Security and Well-being

BILL TO NO. 04925
CHARGE CODE CC2383

03-23-10

0.00/0/30
FED-X GRND 179569210028093

03-23-10

804 Innovation Drive
Knoxville, TN 37932-2562

804 Innovation Drive
Knoxville, TN 37932-2562

ATTN: ACCOUNTS PAYABLE
PIEDMONT, CA 94611

BILLING/CREDIT INQUIRY: (865)-392-5540
FAX: (865)-392-5599

USA

If you wish to receive your invoices via email please respond to: slakins@federalsignal.com

22380

ORIGINAL

Form Revised April 13th 2008
PIPS Technology, Inc.
1108 Raymond Street
Anaheim, CA 92801

Piedmont Police Department
403 Highland Avenue
Piedmont, CA 94611

<table>
<thead>
<tr>
<th>DATE</th>
<th>SHIP VIA</th>
<th>DATE REQUIRED</th>
<th>THIS ORDER IS CONFIRMING</th>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>UNIT PRICE</th>
<th>TOTAL</th>
</tr>
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<tbody>
<tr>
<td>2/11/2010</td>
<td>Ground</td>
<td>N/A</td>
<td></td>
<td>1</td>
<td>Slate - 810 - LE - G; 3 Camera Automated License Plate Recognition System Per Attached Quote</td>
<td>$16,550</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PIPS-TSMON; Touch Screen Monitor for above.</td>
<td>$1,775</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Boss-Admin; Back Office System for above.</td>
<td>$995</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PIPS - SEVC - FE-Mobile; installation/training</td>
<td>$3,200</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This vendor chosen over other 2 vendors for following reasons:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Vendor 2 requires use of in-car computer, at add'l cost</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Chosen vendor offers stand-alone configuration</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Chosen vendor's product is in-service as primary/majority vendor for surrounding agencies. This allows for easier data sharing with these agencies, plus proven track record of success.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: $22,520.00
Shipping (est): $250.00
(est) 9.75% SALES TAX $1,683.70
Total: $24,653.70

REQUESTOR: Watt A3

FINANCE DIRECTOR: 

This order subject to conditions on the reverse side.

<table>
<thead>
<tr>
<th>P.O. NO.</th>
<th>FUND</th>
<th>DEPT.</th>
<th>ACCOUNT</th>
<th>AMOUNT</th>
<th>DATE</th>
<th>VENDOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>04925</td>
<td>110</td>
<td>0437</td>
<td>012-000</td>
<td>Estimate $24,653.70</td>
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</tr>
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</table>
Fax Call Report

Job  Date  Time  Type  Identification  Duration  Pages  Result
2855  2/12/2010  4:39:18PM  Send  18653925599  1:25  4  OK

Fax

Tax  Lindsey Plummer  From  Scott Wyse
Fax  (965) 340-5500  Date  February 12, 2010
Phone  (965) 340-5547  Pages  4 including cover sheet
Fax  Purchase Order  EDS

☐ Urgent  ☐ For Review  ☐ Please Comment  ☐ Please Reply  ☐ Please Recycle

*Comment: Attached, please find our Purchase Order # 0482 for the purchase of a PPS system.

22382  001942
To: Lindsay Plummer  From: Scott Wyatt

Fax: (865) 392-5599  Date: February 12, 2010

Phone: (865) 392-5547  Pages: 4 including cover sheet

Re: Purchase Order  CC:

☐ Urgent  ☐ For Review  ☐ Please Comment  ☐ Please Reply  ☐ Please Recycle

• Comments: Attached, please find our Purchase Order # 04925 for the purchase of a PIPS system.
MUST BE TYPEWRITTEN

CITY OF PIEDMONT
120 Vista Ave., Piedmont, CA 94611
(415) 420-3046

P.O. NUMBER MUST APPEAR ON ALL PACKAGES AND CORRESPONDENCE

Purchase Order

No. 04925

PIPS Technology, Inc.
1108 Raymond Street
Anaheim, CA 92801

PIEDMONT Police Department
403 Highland Avenue
Piedmont, CA 94611

DATE SHIP VIA DATE REQUIRED THIS ORDER IS CONFIRMING NOT
2/11/2010 Ground N/A

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>UNIT PRICE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slate - 810 - LE - G; 3 Camera Automated License Plate Recognition System Per Attached Quote</td>
<td>$16,550</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PIPS-TSMON; Touch Screen Monitor for above.</td>
<td>$1,775</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Boss-Admin; Back Office System for above.</td>
<td>$995</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PIPS - SRVC - FE-Mobile; installation/training.</td>
<td>$3,200</td>
<td></td>
</tr>
</tbody>
</table>

This vendor chosen over other 2 vendors for following reasons:

- Vendor 2 requires use of in-car computer, at add'l cost
- Chosen vendor offers stand-alone configuration
- Chosen vendor's product is in-service as primary/majority vendor for surrounding agencies. This allows for easier data sharing with these agencies, plus proven track record of success.

Subtotal: $22,520.00
Shipping (est): $250.00
(est)9.75% SALES TAX $1,883.70

TOTAL $24,653.70

REQUISITOR

FINANCE DIRECTOR

THIS ORDER SUBJECT TO CONDITIONS ON THE REVERSE SIDE.
November 30, 2009

Capt. Scott Wyatt
Piedmont Police Department

REF: Mobile Law Enforcement License Plate Recognition (ALPR) 3-Camera System with “PAGIS”

Capt. Wyatt,

Thank you for the opportunity to quote our Mobile Law Enforcement Automated License Plate Recognition (ALPR) System referred to as PAGIS. PIPS Technology has been the industry leader in ALPR systems worldwide for over 15 years. When considering an ALPR vendor I hope you will take into consideration the following key points about our company:

- Our only market focus is specializing in Automatic License Plate Recognition technologies.
- As an Original Equipment Manufacturer, we design, manufacture, and develop our own hardware and software – we control the quality and support of our products from start to finish.
- PIPS offers an ALPR “back-end” analysis software package (BOSS) that provides data-mining of “historic” license plate information obtained and stored from all deployed mobile (and fixed) systems within your department.
- Our technology has passed a rigorous 5-protocol day and night testing procedure by the CHP with successful capture and plate interpretation rates obtained at speeds up to 160 miles per hour in various conditions that simulate the mobile law enforcement environment. Our durable camera mounts were designed by law enforcement for law enforcement deployment.
- We have an established sales and support office in Southern California and a local office in Sacramento.

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slate-810-LE-G</td>
<td>$16,550</td>
</tr>
<tr>
<td></td>
<td>Three-Camera Mobile Law Enforcement Package - Three Slate 810 nm cameras, SuperRex III processor, camera cable/connector pkg, GPS module, PAGIS software and dongle, PIPS CA ALPR/OCR Engine, Custom Camera Bracket Mount Assembly.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PIPS-TSMON</td>
<td>$1,775</td>
</tr>
<tr>
<td></td>
<td>Touch Screen Monitor for standalone configuration</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>BOSS-ADMIN</td>
<td>$995</td>
</tr>
<tr>
<td></td>
<td>BOSS Back Office System Software for Law Enforcement. Provides PAGIS User Administration, Data Analysis / Mining, Inter-Agency Data Sharing, Database Management via SQL Express, and data mapping. (Admin+1)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PIPS-SRVC-FE-MOBILE</td>
<td>$3,200</td>
</tr>
<tr>
<td></td>
<td>Installation/training</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** $22,520+
**Scope of Work:**

Our quote includes one (1) PIPS Engineer or an authorized representative on-site in your area to install and integrate our system into your existing patrol car environment. During that time, our system will be installed in your designated vehicle at the location of your choice, and you or the appropriate personnel will receive training on both PAGIS and BOSS by our representative.

Our quote includes the cost for our Back Office Server Software (BOSS) that can be installed on your existing PC, Server or Laptop Computer. During the installation and training, our engineer will install one copy of this software application that is used for mining of all data collected by each PAGIS unit. The initial cost of installing BOSS for your office can be utilized for all future PIPS mobile installations within your organization. It can also integrate with other law enforcement agencies, fixed ALPR sites, or with commercial purchasers of our ALPR systems to provide a comprehensive database of vehicle movement within the surrounding areas where PIPS systems have been deployed. This 2 concurrent user version of BOSS has a storage limit of 4GB. If your agency already has a full license of Microsoft Sequel Server, BOSS will not have any storage limit.

Our quote does not include applicable sales tax and shipping which will be billed at actual cost. Delivery is within 4-6 weeks.

All PIPS equipment hardware and software is covered by a one-year parts and labor warranty. Maintenance agreements are available for both our hardware and software products. These agreements supply you with upgrades and improvements to our OCR engine for enhanced plate detection capabilities and software upgrades for BOSS and PAGIS in addition to all hardware sold by PIPS Technology, Inc. (cameras, processor, cables, connectors and/or touch screen monitor).

Please let me know if you require any other information. I can be reached directly at 916-397-0772 should you have any questions regarding the content of this quotation.

Kindest regards,

Randall Mesa
Regional Sales Manager-Sacramento Office
916-397-0772 or fax 714-871-3418

PIPS Technology, Inc.
1108 Raymond Street
Anaheim, CA 92801
<table>
<thead>
<tr>
<th>Account Rep</th>
<th>P.O. Number</th>
<th>Description</th>
<th>Unit Price</th>
<th>Ext. Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike McGee</td>
<td></td>
<td>CarDetector - Condor DSP Based Mobile LPR 3-Camera System (Expandable to 4 Cam)</td>
<td>$12,480.00</td>
<td>$12,480.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CarDetector software includes:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Includes CarDetector software application, MDC Viewer application &amp; OCR engines</td>
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<td></td>
<td></td>
<td>• Includes Camera control package, Hot-List Management &amp; reporting capabilities</td>
<td></td>
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<td></td>
<td></td>
<td>CarDetector Mobile LPR Software Version 4.2</td>
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<td></td>
<td></td>
<td>Hardware includes:</td>
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<td></td>
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<td>• Includes solid state DSP Unit (No Moving Parts) - Expands to 4 cameras</td>
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<td></td>
<td></td>
<td>• System Shall have Single Point Power Connection w/ SAE certified Wiring Harness</td>
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<tr>
<td></td>
<td></td>
<td>• Field Installed GPS Receiver &amp; factory installed camera cable quick disconnects</td>
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<td></td>
<td></td>
<td>• Includes Qty=1 &quot;C&quot; Series IR/Color LPR Camera - 25mm Lens Package</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Includes Qty=1 &quot;C&quot; Series IR/Color LPR Camera - 50mm Lens Package</td>
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<td></td>
<td>• Includes Qty=1 &quot;C&quot; Series IR/Color LPR Camera - 75mm Lens Package</td>
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<td></td>
<td></td>
<td>Vigilant Video Law Enforcement Product Family Site License - Tier 1</td>
<td>$4,500.00</td>
<td>$4,500.00</td>
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<tr>
<td></td>
<td></td>
<td>Provides access to Vigilant Video's Law Enforcement Family of Video Analytics software product(s) includes Car Detector Mobile LPR Edition, Car Detector Fixed LPR Edition, Law Enforcement Archive &amp; Reporting Network Server (LEARN), CamSmartz, LineUp and other enforcement agencies software applications considered by Vigilant Video to be applicable for benefit of law enforcement agencies</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Includes all technical support, software maintenance, bug fixes, patches, minor software upgrades, major software upgrades and all utilities released within the product evolution</td>
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<td></td>
<td></td>
<td>• As per the Vigilant Video Law Enforcement Product Family Site License agreement</td>
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<td>Qty</td>
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<td>Description</td>
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<tr>
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<td>VV-LEARN-S (SOFTWARE)</td>
<td>$0.00</td>
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<tr>
<td></td>
<td></td>
<td>Vigilant Video's Law Enforcement Archival Reporting Network Software - LEARN</td>
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<td></td>
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<td>• Includes automated 'Hot-List' management with refresh intelligence</td>
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<td></td>
<td></td>
<td>• Automated CarDetector software update management</td>
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<td></td>
<td></td>
<td>• Database of all LPR data acquired by each CarDetector system including images</td>
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<td>• Complete search, mapping, query and data mining utilities w/ administrative security</td>
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<td></td>
<td></td>
<td>• Requires license for MS-Windows 2003 Server &amp; MS-SQL 2005 Provided BY OTHERS</td>
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<tr>
<td></td>
<td></td>
<td>• Server hardware &amp; required software (including OS) provided &amp; installed BY OTHERS</td>
<td></td>
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</tr>
<tr>
<td>1</td>
<td></td>
<td>SSU-LN-COM</td>
<td>$1,240.00</td>
<td>$1,240.00</td>
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<td>Vigilant Video Start Up, Configure and Commissioning of the LEARN Server Application</td>
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<tr>
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<td>• Vigilant Video certified technician to visit site for up to 8 hours</td>
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<td>• Set up and configuration of the LEARN Server application (Software/Hardware)</td>
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<td></td>
<td></td>
<td>• Required for all LEARN deployments w/ hardware provided BY OTHERS</td>
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<td>SSU-34-COM</td>
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<td>Start Up, Configure &amp; Commission the CarDetector Mobile System - 3 or 4 Camera Kit</td>
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<tr>
<td></td>
<td></td>
<td>• Vigilant Video certified technician to visit site for up to 4 hours</td>
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<td></td>
<td></td>
<td>• Set up and configuration of CDMS &amp; LEARN hardware/software system</td>
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<tr>
<td>1</td>
<td></td>
<td>TRNG-CDMS</td>
<td>$980.00</td>
<td>$980.00</td>
</tr>
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<td></td>
<td></td>
<td>Vigilant Video's End User Staff Training for CarDetector Mobile System &amp; LEARN</td>
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<td></td>
<td></td>
<td>• Vigilant Video certified technician to visit site for up to 4 hours</td>
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<td></td>
<td></td>
<td>• Training to include set up, configuration and demonstration of all product features</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>NOTES:</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. All prices are quoted in USD and will remain firm and in effect for 60 days.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Complete system to be delivered within 30 days of AOR (After Receipt of Order).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Two (2) year warranty on all hardware components / Ninety (90) days warranty on all software components.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>4. Compatibility with Vigilant Video hardware/software to be confirmed prior to sale.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>5. Software is manufactured under strict Vigilant Video standard.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>6. This Quote is provided per our conversation &amp; details given by you - not in accordance to any written specification.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>7. This Quote does not include anything outside the above stated bill of materials.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Quoted by: Mike McGee Phone: 707-435-9233 Email: <a href="mailto:mmcgee@wattco.net">mmcgee@wattco.net</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SubTotal | $20,110.00
Sales Tax | $1,960.73
Shipping | $45.00

Total | $22,115.73
Prices are valid for 30 days from date of quote unless otherwise specified

We specifically disclaim any and all warranties, expressed or implied, including but not limited to any implied warranties, or with regard to any licensed products. We shall not be liable for any loss of profits, business, goodwill, data, interruption of business, nor for incidental or consequential merchantability or fitness of purpose, damages related to this agreement. Prices are subject to change without notice. All shortage, damage or return claims must be made within 30 days of invoice date. Copy of invoice must be shipped with returns and all returns must have a Return Merchandise Authorization (RMA) number assigned and prominently marked on the outside of each box. Any returns without this information are subject to refusal and return at customer's expense.

PLEASE REMIT PAYMENT TO: WATTCO - 2230 Cordelia Road - Fairfield, CA 94534

Interest will be charged at the rate of 1 1/2% each month on accounts over 30 days.
Automatic License Plate Recognition System

CLIENT: Piedmont, CA PD
403 Highland Ave.
Piedmont, CA 94941

ATTENTION: Capt. Scott Wyatt
QUOTE REF: Piedmont, CA PD - 001

201 SW Birch Street, Suite 250, Newport Beach, CA 92660
DATE: 10/30/09

CONTACT: Bob Pinzler
bpinzler@civicasoft.com
310-994-6054

All prices are in US dollars. These prices are based on the systems being networked to an existing Mobile Data Computer (MDC) running Windows XP or 2000. Where such a system does not exist, we can supply a touch-screen, keyboard and mounts for an additional $1,650 per vehicle.

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>PlateScan</em> mobile 3-camera ALPR system (SYS-3-R)</td>
<td>$19,995.00</td>
<td>$19,995.00</td>
</tr>
<tr>
<td></td>
<td>Each includes: Mobile Data Computer with trunk mounts (PS PPU80A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GPS Receiver (PS GPS1)</td>
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<td></td>
<td>Cameras capable of reading 3 lanes of traffic simultaneously, consisting of:</td>
<td></td>
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<tr>
<td></td>
<td>3 dual IR/color overview cameras (PSC R7), externally mounted,</td>
<td></td>
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<tr>
<td></td>
<td>A software package (PS CA) comprising:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Windows XP Operating system, PlateScan License Plate Recognition system and user interface</td>
<td></td>
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<td></td>
<td>local database software, manual entry software</td>
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<tr>
<td></td>
<td>Each includes: Wiring loom, light bar mounting brackets, external and internal camera mounts and all necessary cables, connectors and installation and user manuals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td><em>PlateScan</em> Data Analysis Module (PS-DAM)</td>
<td>Included</td>
<td>N/C</td>
</tr>
<tr>
<td></td>
<td>This central repository of data downloaded onto an existing server running MS-SQL includes the following features:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The ability to search and archive data downloaded either from a memory stick or wirelessly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Each plate patch and vehicle image will be stored and be searchable either as a full or partial plate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The date, time and GPS coordinates of every license plate scanned will be stored and mapped.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Installation and user training</td>
<td>$1,750.00</td>
<td>$1,750.00</td>
</tr>
<tr>
<td></td>
<td>A PlateScan engineer will install your system at your facility and train the primary users on the system's operation includes travel and accommodations.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SUBTOTAL $21,745.00
SALES TAX $1,949.51
TOTAL $23,694.51

TERMS: 40% on order, 60% on delivery
DELIVERY: Within 8 weeks of order
MAINTENANCE: The system is supplied with a one year warranty on all hardware and software, including any upgrades issued during that time. Further annual maintenance to cover all hardware and software is available at 13.5% of the capital purchase cost.

THIS QUOTATION IS VALID FOR 60 DAYS.
Mobile ALPR System, CUSTOMER SURVEY

This form is to be completed in conjunction with issuing a formal quotation to any customer that is intent on the purchase of a mobile ALPR system from PIPS Technology. This form must be captured as an attachment to the Opportunity created in SalesForce.com along with the quotation.

Sales Person: MESA
Work: ___________________ Cell: 916-397-0772 Email: ___________________

Reseller Information (if applicable)
Company Name: N/A
Contact Name: ___________________
Work: ___________________ Cell: ___________________ Email: ___________________

Customer Contact for Installation Coordination
Customer Name: Piedmont Police Department
Vehicle Install Address: 403 Highland Avenue, Piedmont, CA 94611
Contact Name: Scott A. Wyatt
Work: 510-420-3012 Cell: ___________________ Email: swyatt@piedmontpd.org
Software Install Address: Same
Contact Name: ___________________
Work: ___________________ Cell: ___________________ Email: ___________________

Customer Contact for IT Support & Administration
System Administrator: Scott A. Wyatt
Work: 510-420-3012 Cell: ___________________ Email: swyatt@piedmontpd.org
IT Support: Richard DeShong
Work: ___________________ Cell: 925-285-1088 Email: rdeshong@piedmontpd.org

Installation Recommendation

- PIPS Installer
- Customer fleet service with PIPS supervision/commissioning
- Authorized Service Shop
- Customer fleet service with PIPS commissioning
  (previous installation experience with PIPS required)

Notes: ___________________

________________________
________________________
________________________
PIPS Mobile System Camera Configuration (check one)

- Platinum
- Gold
- Silver
- Silver
- Bronze
- Bronze

Customer Use Cases (check the use case configuration that applies)

**Platinum Package**
- Two Highway & Two Parking
- One Highway, One Street Parking & Two Side Parking
- Opt. Left Side Parking into Rear Facing Highway

**Gold Package**
- Two Highway & One Parking
- One Highway, One Street Parking & One Side Parking
- Opt. Left Side Highway Rear Facing

**Silver Package**
- Two Highway
- One Highway & One Street Parking
- One Highway & One Side Parking
- One Street Parking & One Side Parking
- Opt. Left Side Highway Rear Facing

**Bronze Package**
- One Highway
- Opt. Left Side Highway Rear Facing
- One Street Parking
- One Side Parking

**Vehicle Details**

- Number of vehicles to be deployed: One (1)
- Make, model and year of vehicle: 2006 Ford Crown Victoria Police Interceptor
- Light bar manufacturer and model: Whelen, Edge Ultra Freedom, LED Lightbar
- If no light bar is available, what is the recommended mounting technique for the vehicle?

- Is the vehicle equipped with factory installed Police Package? Yes ☑️ No
- Is vehicle equipped with a Charge Guard? Timer Set to Yes ☑️ No ☑️
- Does the vehicle contain an equipment tray in trunk? Yes ☑️ No ☑️
- Is there enough space on tray to mount SuperX (12x16)? Yes ☑️ No

*Note: this section must be completed for each vehicle deployed if any of the noted details of the vehicle are different.*
## PAGIS Hardware Configuration

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone Configuration</td>
<td><img src="Y" alt="Y" /></td>
<td><img src="n" alt="n" /></td>
</tr>
<tr>
<td>Client/Server Configuration</td>
<td><img src="n" alt="n" /></td>
<td><img src="y" alt="y" /></td>
</tr>
</tbody>
</table>

*If Yes, PIPS monitor must be included as part of the quote*

**MDC Make/Model:**

Ethernet port must be available to use existing MDC in client/server architecture.

**Has this been confirmed?**

**Notes:**

---

## BOSS Considerations

**BOSS hardware provided by customer:**

*If Yes, provide the customer with the PIPS minimum specifications for a BOSS server*

**SQL Server 2005/2008 database engine to be provided by customer?**

*Note: BOSS 3.0 Currently only supports SQL Server 2005 & 2008*

**BOSS Virtual Mapping:**

**BOSS Licensing:**

**What type of hotlist databases will be used in BOSS?**

---

## Data Communication

**Data transfer between BOSS and PAGIS will be accomplished by:**

- [ ] USB Thumb Drive *(Must have available USB port on MDC)*
- [x] Physical Ethernet Connection
- [x] WiFi HotSpot
- [x] Cellular Data Aircard
- Mesh Network

**Cellular Provider:**

---
PAGIS Installation Notes:

PAGIS Client/Server Architecture:
To install PAGIS on the MDC, the PIPS technician will require temporary Windows Administrative Right for the MDC that must be provided by the agency’s IT department.

MDC/MDT Minimum Requirements:
- 1.2 GHz AMD or Intel Processor with 1GB of Memory with 128MB available for PAGIS.
- Windows XP Pro with Service Pack2 or later, (Windows Vista or 7 not supported).
- Available 10/100 Ethernet Port and USB Port (1.1 or higher - 2.0 preferred).
- 15 GB available space on the hard drive.
- XVGA screen with minimum of 800x600 screen resolution. Touch screen preferred.

Ethernet Port on MDC:
You will need to have an available Ethernet port available on your MDC. We must be able to set the IP address of this port to (192.200.200.200). Hubs are not an option. If you do not have an available port, you will need to purchase a USB or PCMCIA adaptor that adds an Ethernet port to your MDC. Our ALPR system need full ownership of that port.

NetMotion:
If you are running NetMotion, you will need version 6.5 or higher with the Policy Manager License (extra add-on license above and beyond the standard NetMotion server license offered by NetMotion). Refer to NetMotion Tech Noted # 2200.

Anti-Virus Applications:
Anti-Virus applications and or network filters such as Symantec may interfere with PAGIS operation.

PAGIS Connection to BOSS:
If using a USB Thumb Drive to transmit data between BOSS and PAGIS, the Thumb Drive must have a minimum of 256MB available space.
(Note: Thumb Drives using U3 technology are not supported)
**BOSS Installation Notes:**

**BOSS System Requirements:**

<table>
<thead>
<tr>
<th>Minimum System Configuration</th>
<th>Recommended System Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Pentium compatible CPU at 1.5GHz</td>
<td></td>
</tr>
<tr>
<td>- Windows XP SP2 or later</td>
<td></td>
</tr>
<tr>
<td>- 512 MB of RAM</td>
<td></td>
</tr>
<tr>
<td>- 1 GB of hard drive space</td>
<td></td>
</tr>
<tr>
<td>- Microsoft SQL Server 2005 Express Edition</td>
<td></td>
</tr>
<tr>
<td>- Intel Xeon quad-core CPU at 2.0GHz</td>
<td></td>
</tr>
<tr>
<td>- 32 GB of RAM</td>
<td></td>
</tr>
<tr>
<td>- SCSI or SAS hard drives at 10,000 RPM</td>
<td></td>
</tr>
<tr>
<td>- 1 GB of hard drive space per 50,000 reads stored</td>
<td></td>
</tr>
</tbody>
</table>

**Microsoft SQL Server:**

Microsoft SQL server 2005/2008 is required to house the BOSS database. If no SQL is available, PIPS can provide a SQL license as a line item on the quotation. (Note: PIPS can implement a free version of SQL Server Express Edition to customers with only one vehicle deployment and data storage requirements have a 4GB limitation).

**BOSS Internet Connectivity:**

BOSS requires an internet connection to utilize Microsoft's software licensing key activation and to access Bing Maps if selected for mapping option (Recommended). (Note: if internet connection is not possible, email activation is possible)

**BOSS Databases:**

The customer is responsible for securing all databases of interest for use with BOSS. The user will need to make arrangements to secure access to the State version of the NCIC database or any other databases of interest prior to BOSS installation.

**Firewall / Proxy Servers:**

If using a firewall or Proxy Servers, the IT department will need to configure these systems to allow BOSS communication to various components of the ALPR system. (See Below)

- BOSS Internet access to the Microsoft Bing Maps site, TCP port 80 (if using this option).
- BOSS Smart Client installations on workstations will need an open communication route to two TCP/IP ports on the BOSS Server (default 23032 & 23033)
- PAGIS 2.5x communication to BOSS if using WiFi or Cellular aircard must have open communication route to the BOSS Server TCP/IP port (default 8090).

**Mental Checklist to cover with the Customers:**

- Discuss hit list database sources and customer responsibility to provide
- Discuss the importance of appropriate size of server and database engine based on customer requirement for data mining
- Cover warranty terms and quote extended maintenance as part of the initial quote
- Discuss the analytical power of BOSS and the ability to data share
- Discuss the benefit of both fixed and mobile ALPR solutions as an integrated program for maximum benefit
## SUPEREX 3 Data Collection Form
### OQA Form

**CUSTOMER:** PIEDMONT  
**QTY:** 2 P632 / 4-810 nm-25-12  
**QTY:** 1 P632 / 4-810 nm-06-06  
**SX S/N:** KX020951100039  
**DONGLE S/N:** 05308  
**GPS S/N:** 1A4042314  
**CAM S/N:** KX011006010033  
**CAM S/N:** KX0110070000037  
**CAM S/N:** KX011007000008  
**MON S/N:** 101135113  
**WUSB54GC:** N/A

### NO LOOSE MATERIAL INSIDE SX3 (SHAKE TEST)

### CHECK ALL INTERNAL CABLES ARE LOCKED AND SEATED

### ALL INTERNAL SCREWS ARE FASTENED

### CHECK COSMETIC FOR BLIMISH

### POWER UP WITHOUT PLUGGING IN KEYBOARD AND MOUSE

### SX FRONT LED LIGHTS UP

### FANS ARE ALL WORKING  
**EWF IS LOCKED**

### TIME ZONE IS SET AS PER INDIVIDUAL CUSTOMER'S ORDER

### VERIFY DAY AND TIME PER INDIVIDUAL CUSTOMER'S ORDER

### ELECTRONIC S/N IS SET FOR SX 3

### ELECTRONIC S/N IS SET FOR CAMERAS

### VERIFY GPS ACTIVITIES WITH THE SX

### VERIFY CAMERA FLASHTABLES

### ALL CAMERA PORTS ARE ACTIVE  
**CHECK IR LEDS ARE ALL ILLUMINATED AND PULSING**

### ALL CAMERA'S CABLES ARE OPERATING PROPERLY

### CORRECT FOLDERS (PAGIS and PIPS TOOLS) ARE PRESENT IN "D" DRIVE

### PAGIS IS OPERATING PROPERLY IN ALL MODES

### OCR REGION: CA  
**CARDET VERSION** 2330

### ENDSHIFT IS PERFORMED ON PAGIS

### CLEAR EWF LOG

### CLEAR WINDOWS LOGS

### CHECK ONLY FOR P6 FIELD UTILITY IN PIPS TOOLS

### SCREW DOWN LID

### SCREW DOWN FEET

### PUT 2 WARRENTY LABELS AT THE BACK SCREWS ON THE LID

### PLACE WINDOWS LICENSE LABEL ON SX

### CAMERA CABLES in BAG  
**QTY:** 3

### ETHERNET CABLE

### POWER CABLE

### IN-LINE FUSE CABLE WITH 20A FUSE

### COUNT OF ALL CABLES = TO WO

### MOUNTING BRACKETS AND HARDWARE = TO WO

### STAND ALONE SYSTEM:

### VERIFY MONITOR WORKS W/ALL CABLES  
**LIND PSU KIT**  
**AUDIO CABLE**

### VERIFY AUDIO OUTPUT FROM MONITOR  
**A-B USB CABLE**  
**VGA CABLE**

### VERIFY TOUCH SCREEN CALIBRATION  
**USB EXTENTION CABLE**

**OQA SIGNATURE:** [Signature]  
**DATE:** 3-18-10

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22396  
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**Page 1 of 1**  
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**Revision 3**