



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
DPS1011

RFQ NO.
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
JOHN ABBOTT
304-558-2544

RFQ COPY
 TYPE NAME/ADDRESS HERE
West Virginia Signal & Light, Inc
Po Box 134
Kenna, WV 25248

WEST VIRGINIA STATE POLICE
4124 KANAWHA TURNPIKE
SOUTH CHARLESTON, WV
25309 **304-746-2141**

DATE PRINTED 10/26/2009	TERMS OF SALE NET 30	SHIP VIA Best way Ground	FOB Dest	FREIGHT TERMS Included
BID OPENING DATE: 11/12/2009		BID OPENING TIME 01:30PM		

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LS		055-54		\$301,600.00
LIGHTS: EMERGENCY AND TROUBLE (AUTOMOTIVE) OPEN-END CONTRACT TO PROVIDE EMERGENCY LIGHTING AND WARNING EQUIPMENT FOR THE WEST VIRGINIA STATE POLICE, AND ALL OTHER AUTHORIZED AGENCIES, PER THE SPECIFICATIONS. EXHIBIT 3 LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE ON AND EXTENDS FOR A PERIOD OF ONE (1) YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING 30 DAYS WRITTEN NOTICE. UNLESS SPECIFIC PROVISIONS ARE STIPULATED ELSEWHERE IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT. RENEWAL: THIS CONTRACT MAY BE RENEWED UPON THE MUTUAL WRITTEN CONSENT OF THE SPENDING UNIT AND VENDOR, SUBMITTED TO THE DIRECTOR OF PURCHASING THIRTY (30) DAYS PRIOR TO THE EXPIRATION DATE. SUCH RENEWAL SHALL BE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT AND SHALL BE LIMITED TO TWO (2) ONE (1) YEAR PERIODS.						

RECEIVED
 2009 NOV 12 PM 12:26
 WV PURCHASING DIVISION

SIGNATURE: *[Signature]*
 TITLE: **Sales Engineer** FEIN: **550646159** TELEPHONE: **304-372-9648** DATE: **11/11/09**

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LARGELY VENDOR

ADDRESS CHANGES TO BE NOTED ABOVE

GENERAL TERMS & CONDITIONS REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
5. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.
14. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
15. **WEST VIRGINIA ALCOHOL & DRUG-FREE WORKPLACE ACT:** If this Contract constitutes a public improvement construction contract as set forth in Article 1D, Chapter 21 of the West Virginia Code ("The West Virginia Alcohol and Drug-Free Workplace Act"), then the following language shall hereby become part of this Contract: "The contractor and its subcontractors shall implement and maintain a written drug-free workplace policy in compliance with the West Virginia Alcohol and Drug-Free Workplace Act, as set forth in Article 1D, Chapter 21 of the West Virginia Code. The contractor and its subcontractors shall provide a sworn statement in writing, under the penalties of perjury, that they maintain a valid drug-free work place policy in compliance with the West Virginia Alcohol and Drug-Free Workplace Act. It is understood and agreed that this Contract shall be cancelled by the awarding authority if the Contractor: 1) Fails to implement its drug-free workplace policy; 2) Fails to provide information regarding implementation of the contractor's drug-free workplace policy at the request of the public authority; or 3) Provides to the public authority false information regarding the contractor's drug-free workplace policy."

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in case of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

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ADDRESS CORRESPONDENCE TO ATTENTION OF
JOHN ABBOTT
304-558-2544

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WEST VIRGINIA STATE POLICE

4124 KANAWHA TURNPIKE
SOUTH CHARLESTON, WV
25309 304-746-2141

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
10/26/2009				

BID OPENING DATE: **11/12/2009** **BID OPENING TIME 01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.</p> <p>OPEN MARKET CLAUSE: THE DIRECTOR OF PURCHASING MAY AUTHORIZE A SPENDING UNIT TO PURCHASE ON THE OPEN MARKET, WITHOUT THE FILING OF A REQUISITION OR COST ESTIMATE, ITEMS SPECIFIED ON THIS CONTRACT FOR IMMEDIATE DELIVERY IN EMERGENCIES DUE TO UNFORESEEN CAUSES (INCLUDING BUT NOT LIMITED TO DELAYS IN TRANSPORTATION OR AN UNANTICIPATED INCREASE IN THE VOLUME OF WORK.)</p> <p>QUANTITIES: QUANTITIES LISTED IN THE REQUISITION ARE APPROXIMATIONS ONLY, BASED ON ESTIMATES SUPPLIED BY THE STATE SPENDING UNIT. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACT SHALL COVER THE QUANTITIES ACTUALLY ORDERED FOR DELIVERY DURING THE TERM OF THE CONTRACT, WHETHER MORE OR LESS THAN THE QUANTITIES SHOWN.</p> <p>ORDERING PROCEDURE: SPENDING UNIT(S) SHALL ISSUE A WRITTEN STATE CONTRACT ORDER (FORM NUMBER WV-39) TO THE VENDOR FOR COMMODITIES COVERED BY THIS CONTRACT. THE ORIGINAL COPY OF THE WV-39 SHALL BE MAILED TO THE VENDOR AS AUTHORIZATION FOR SHIPMENT, A SECOND COPY MAILED TO THE PURCHASING DIVISION, AND A THIRD COPY RETAINED BY THE SPENDING UNIT.</p> <p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THE STATE MAY DEEM THE CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT WITHOUT FURTHER ORDER.</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia
 Department of Administration
 Purchasing Division
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SHIP TO

WEST VIRGINIA STATE POLICE

4124 KANAWHA TURNPIKE
 SOUTH CHARLESTON, WV
 25309 304-746-2141

DATE PRINTED 10/26/2009	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
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LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>THE TERMS AND CONDITIONS CONTAINED IN THIS CONTRACT SHALL SUPERSEDE ANY AND ALL SUBSEQUENT TERMS AND CONDITIONS WHICH MAY APPEAR ON ANY ATTACHED PRINTED DOCUMENTS SUCH AS PRICE LISTS, ORDER FORMS, SALES AGREEMENTS OR MAINTENANCE AGREEMENTS, INCLUDING ANY ELECTRONIC MEDIUM SUCH AS CD-ROM.</p> <p>REV. 05/26/2009</p> <p>EXHIBIT 4</p> <p>LOCAL GOVERNMENT BODIES: UNLESS THE VENDOR INDICATES IN THE BID HIS REFUSAL TO EXTEND THE PRICES, TERMS, AND CONDITIONS OF THE BID TO COUNTY, SCHOOL, MUNICIPAL AND OTHER LOCAL GOVERNMENT BODIES, THE BID SHALL EXTEND TO POLITICAL SUBDIVISIONS OF THE STATE OF WEST VIRGINIA. IF THE VENDOR DOES NOT WISH TO EXTEND THE PRICES, TERMS, AND CONDITIONS OF THE BID TO ALL POLITICAL SUBDIVISIONS OF THE STATE, THE VENDOR MUST CLEARLY INDICATE SUCH REFUSAL IN HIS BID. SUCH REFUSAL SHALL NOT PREJUDICE THE AWARD OF THIS CONTRACT IN ANY MANNER.</p> <p>REV. 3/88</p> <p>PURCHASING CARD ACCEPTANCE: THE STATE OF WEST VIRGINIA CURRENTLY UTILIZES A VISA PURCHASING CARD PROGRAM WHICH IS ISSUED THROUGH A BANK. THE SUCCESSFUL VENDOR MUST ACCEPT THE STATE OF WEST VIRGINIA VISA PURCHASING CARD FOR PAYMENT OF ALL ORDERS PLACED BY ANY STATE AGENCY AS A CONDITION OF AWARD.</p> <p>NOTICE</p> <p>A SIGNED BID MUST BE SUBMITTED TO:</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



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VENDOR

SHIP TO

WEST VIRGINIA STATE POLICE
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SOUTH CHARLESTON, WV
25309 304-746-2141

DATE PRINTED	TERMS OF SALE	SHIP VIA	FOB	FREIGHT TERMS
10/26/2009				

BID OPENING DATE: **11/12/2009** BID OPENING TIME: **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130						
THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED: SEALED BID						
BUYER:				JOHN ABBOTT (32)		
RFQ. NO.:				DPS1011		
BID OPENING DATE:				11/12/2009		
BID OPENING TIME:				1:30 PM		
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID: ----- 304-372-9684 -----						
CONTACT PERSON (PLEASE PRINT CLEARLY): ----- Vance Fitzsimmons -----						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE _____ TELEPHONE _____ DATE _____

TITLE _____ FEIN _____ ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

See attached letter

SPECIFICATIONS FOR EMERGENCY VEHICLE LIGHTING AND WARNING EQUIPMENT

The West Virginia State Police is requesting competitive bids for police emergency vehicle lighting and warning equipment as per the attached specifications. The contract shall be available for use by all other entities of state government, as well as counties and municipalities.

All vendors bidding on any equipment listed in these specifications are required to submit in writing, an indication as to if the product(s) they are bidding meets or exceeds ALL the specifications set forth in these specifications for those item(s) they are bidding on. If a vendor bids a product which does not meet ALL the specifications as outlined for that item, the vendor is required to submit their exceptions in writing being specific listing the item and line-specification(s) they are taking exception to. Vendors are also required to submit a product sheet for each item bid, which is to include at a minimum: picture, manufacturer, model number, and general specifications for the item. **Any bid received without this required written documentation will not be considered for bid award.**

The agency has listed multiple items in this bid specification and has numbered each as a separate item. The agency reserves the right to make multiple or split awards from this single solicitation.

1. SIREN AND LIGHT CONTROL SYSTEM (TIER-1)

YES NO

1.0.1 The emergency vehicle siren and light control system shall be as specified below and shall be the Federal Signal PA640 Series or equivalent. All major components must be designed and manufactured in the United States of America. Bids that contain major components manufactured outside the United States of America are not acceptable.

1.1.0 SIREN AMPLIFIER:

1.1.1 The remote siren system shall consist of a control head with a 4-position slide switch and a minimum of six (6) push button switches, and a combined electronic siren amplifier and relays in one (1) module capable of providing a minimum of a five (5) function siren, plus radio repeat and public address.

1.1.2 The system shall be capable of being utilized as a single unit or by separating the control head and the amplifier/relay module (ARM) and mounting the pieces separately to conserve space needed in the front of the vehicle.

✓

1.1.3 The system shall have a small single connector to connect the control head to the AMP/Relay Module as described in the following specification.

✓

1.1.4 The system shall be constructed to be immune to radio frequency interference (RFI) and electromagnetic interference (EMI). The system shall be constructed in a manner to not create any radio frequency interference (RFI) and electromagnetic interference (EMI).

✓

1.2.0 CONTROL HEAD:

1.2.1 The control head shall be supplied with an adjustable universal style mounting bracket and a semi-flush trim ring. All necessary mounting hardware for these mounts shall also be supplied. The unit shall be no larger than 2-1/2 inches deep (including slide switch) x 3-3/8 inches high x 6 8 inches wide (excluding mounting hardware).

✓

1.2.2 The control head connector shall be built into the back of the unit. The connector shall be designed so it cannot be easily pulled apart from the connection. The location of this connector shall not be in a location that is visible or interferes with installation of the unit into a console.

✓

1.2.3 The control head must incorporate a single circuit board design. Each push button switch must have both tactile and audible ("beep") feedback to the user. Control heads that do not have this feature are not acceptable since the driver would have to take his eyes off the road to determine if the switch is operating. Control heads with multi-board designs are unacceptable; since the internal interconnect cable can become disconnected unknowingly, with service not user friendly.

✓

1.2.4 Each tactile switch must be backlit and each switch must include a separate LED or lamp "On" indicator above or on the switch face that provides enough light to allow it to be seen even in bright day light without washing out, or the switch must change colors to indicate it is activated "On". Both the switch backlight and the LED "On" indicator must have a low intensity feature for ease of night time visibility. Units that are not backlit, or which do not have a separate LED "On" indicator visible in bright day light or do not change colors to indicate it is "On" are not acceptable. Each of the push button switches shall have its own back-lit legend tab. This will help in identifying the functions that are in use. There shall be a minimum of (36) legends to choose from

1.2.5 The control head shall be supplied completely assembled with a minimum of the following:

- 4-position positive detent slide switch (programmable)
- Six (6) (minimum) push button switches located in a row that directly interface with the control head electronics and operates external equipment such as lightbars, headlight flashers, etc.
- 5-position siren control knob
- PA/Volume control knob

Noise-canceling microphone with 3 ft. coiled cord

1.2.6 The control head shall have a rotary style switch with a minimum of five (5) positions to control the siren which shall include the following: *Wail; Yelp; Piercer (or Hi/Lo); Manual;* and *Airhorn*. There shall also be a minimum of five (5) push button switches in a row which are programmable for On/Off; Momentary; or 8 Second Timer. There shall also be a slide switch containing a minimum of 4-positions (Off, 1, 2, & 3) which shall be located on the left-hand side of the device. The Horn Ring Transfer shall be transferred when the slide switch is in position-3 and will scroll through the siren tones, starting with the tone chosen on the selector switch.

1.3.0 AMPLIFIER/RELAY MODULE (ARM):

1.3.1 The aluminum/metal housing of the ARM shall have built-in ventilator ports to assist in keeping all internal components cool for long life and reliability. It shall be supplied with all necessary mounting hardware. The amplifier shall measure no more than approximately 7 inches wide x 7-3/4 inches deep x 3.0 inches high

✓ _____

1.3.2 The ARM operates on a 12 volt negative ground automotive electrical system. The amplifier shall be designed to operate from a minimum of 11V to 15V and shall be reverse-polarity protected to ensure that the unit will not be damaged if polarity is reversed.

✓ _____

1.3.3 The ARM shall have all power and device control connectors on the rear of the module.

✓ _____

1.3.4 The siren shall be capable of operating a minimum of one (1) 100 watt speakers and must meet Class "A" requirements with most 100 watt speakers. If the siren speaker(s) or any speaker wires are shorted, the siren amplifier will shut down to avoid damage to the circuitry until the short circuit is removed.

✓ _____

1.3.5 The PTT ("Push To Talk") switch on the microphone will override all siren functions.

✓ _____

1.4.0 WARRANTY:

1.4.1 The system specified shall be warranted to the user to be free of defects of material or workmanship for a minimum period of two (2) years from date of purchase.

✓ _____

1.4.2 The amplifier shall be warranted for a minimum period of five (5) years.

_____ ✓

1.4.3 Written proof of this warranty shall be provided with bid.

✓ _____

2. SIREN AND LIGHT CONTROL SYSTEM (TIER-2)

2.0.1 The emergency vehicle siren and light control system shall be as specified below and shall be either the Federal Signal SmartSiren or Whelen Model CCSRN2 Siren/Switch, and SA315P Speaker or equivalent. All major components must be designed and manufactured in the United States of America. Bids that contain major components manufactured outside the United States of America are not acceptable.

✓ _____

2.1.0 SIREN AMPLIFIER:

2.1.1 The remote siren system shall consist of a control head with a 4-position slide switch and a minimum of seventeen (17) push button switches, and a combined electronic siren amplifier and relays in one (1) module

✓ _____

2.1.2 The system shall utilize a small single connector to connect the control head to the AMP/Relay Module as described in the following specification.

✓ _____

2.1.3 The system shall be constructed to be immune to radio frequency interference (RFI) and electromagnetic interference (EMI). The system shall be constructed in a manner to not create any radio frequency interference (RFI) and electromagnetic interference (EMI).

✓ _____

2.2.0 CONTROL HEAD:

2.2.1 The control head shall be supplied with an adjustable universal style mounting bracket, a semi-flush trim ring, and a pivot or swing style bracket for mounting the control head in front of the am/fm radio which is designed so the control head can easily be rotated out of the way of the am/fm radio controls. All necessary mounting hardware for these mounts shall also be supplied. The unit shall be no larger than 2.15 inches deep (including slide switch) x 3-5/8 inches high x 6-13/16 inches wide (excluding mounting hardware).

✓ _____

2.2.2 The control head connector shall be built into the back or end of the unit. The connector shall be designed so it cannot be easily pulled apart from the connection. The location of this connector shall not be in a location that is visible or interferes with installation of the unit into a console.

✓ _____

2.2.3 The control head must incorporate a single circuit board design. Each push button switch must have both tactile and audible ("beep") feedback to the user. Control heads that do not have this feature are not acceptable since the driver would have to take his eyes off the road to determine if the switch is operating. Control heads with multi-board designs are unacceptable; since the internal interconnect cable can become disconnected unknowingly, with service not user friendly.

✓ _____

2.2.4 Each tactile switch must be backlit and each switch must include a separate LED "On" indicator above or on the switch face that provides enough light to allow it to be seen even in bright day light without washing out, or the switch must change colors to indicate it is activated "On". Both the switch backlight and the LED "On" indicator must have a low intensity feature for ease of night time visibility. Units that are not backlit, or which do not have a separate LED "On" indicator visible in bright day light or do not change colors to indicate it is "On" are not acceptable. Each of the push button switches shall have its own back-lit legend tab. This will help in identifying the functions that are in use. There shall be a minimum of (136) legends to choose from.

_____ ✓

2.2.5 The control head shall be supplied completely assembled with a 4-position (positive detent) slide switch that is programmable, and minimum of eighteen (17) push button switches that directly interface with the control head electronics and operates external equipment such as lightbars, headlight flashers, Traffic Advisors, etc.

✓ _____

2.2.6 The control head shall have a minimum of eight (8) On/Off siren switches located in a row or grouped together to include: *Stand-By*; *Radio Repeat*; *Hands-Free*; *Wail*; *Yelp*; *Piercer (or Hi/Lo)*; *Manual*, and *Airhorn*. There shall also be a minimum of four (4) switches in a row or grouped together to include: *Traffic Advisor Direction Control (Left, Right, Split)*; *Aux 1*; *Aux 2*; and *Low Power*. There shall also be a minimum of five (5) switches in a row or grouped together which will activate a minimum of (4) 10 amp circuits and a minimum of (1) switch which will operate an open, dry contact relay in the AMP/Relay Module. All five (5) switches are programmable for On/Off; Momentary; or 8 Second Timer. There shall also be a slide switch containing a minimum of 4-positions which shall be located on the left-hand side of the device. It shall be programmable as independent switches or progressive, and will have (2) 20 amp and (1) 40 amp positions. The slide switch must be programmable to include either *Wail* with *Yelp* override or *Hands Free* operation in any one of the three "On" positions. Each slide switch position will also be programmable to operate Traffic Advisor flasher mode, Aux1/Aux2, Low Power and all five (5) programmable switches

_____ ✓ _____

2.3.0 AMPLIFIER/RELAY MODULE (ARM):

2.3.1 The aluminum/metal housing of the ARM shall have built-in ventilator ports to assist in keeping all internal components cool for long life and reliability. It shall be supplied with a minimum of two (2) mounting feet that must be built into the design of the assembly for superior strength, and includes all necessary mounting hardware. The amplifier shall measure no more than approximately 7 inches wide x 7 inches deep x 3.0 inches high.

_____ ✓ _____

2.3.2 The ARM operates on a 12 volt negative ground automotive electrical system. The amplifier shall be designed to operate from a minimum of 11V to 15V and shall be reverse-polarity protected to ensure that the unit will not be damaged if polarity is reversed.

_____ ✓ _____

2.3.3 The ARM shall have all power and control connectors on one side of the module. There shall be a minimum of three (3) heavy duty Anderson style power connectors for main power to the amplifier and for power distribution to other warning accessories. Units that require that the module be opened to change fuses or make any power or control connections are not acceptable.



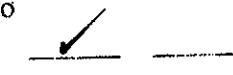
2.3.4 The siren shall be capable of operating one (1) or two (2) 100 watt speakers and must meet Class "A" requirements with most 100 watt speakers. If the siren speaker(s) or any speaker wires are shorted, the siren amplifier will shut down to avoid damage to the circuitry until the short circuit is removed.



2.3.5 In the *Hands-Free* mode, the siren shall be in a "Stand By" state, awaiting electronic commands. The siren will progressively change from *Wail* to *Yelp* to *Piercer* (Tone 3) by simply tapping the horn ring only once, each time. This provides the driver with a means of changing siren selections while keeping both hands on the wheel, and eyes on the road at all times.



2.3.6 The ARM shall consist of two (2) parts: a Top and a Bottom aluminum housing which fits together in a clamshell design. The design shall be constructed so the amplifier and logic boards for the system are contained in either the top or the bottom of the housing and the relay outputs and optional Traffic Advisor modules (if required) are contained in the other portion of the housing. This design will assure ease of service to all internal components in a non-stacking PC board design; which is unacceptable since it is very difficult to easily service the unit



2.3.7 System programming shall be accomplished either through the use of a computer using a USB or Ethernet interface to the system, or through the use of the control head by pushing a sequence of switches to enter the programming mode of the system. The program must be able to be extracted from one system and inserted into an unlimited number of systems. Systems that allow changes or through internal DIP switches are not acceptable.



2.3.8 The unit must be supplied complete with a noise-canceling microphone with at least a 3 ft. coiled cord. If the microphone connection is located on the ARM and not the Control Head, then a 20 ft. (minimum) microphone extension cable shall be provided. The PTT ("Push To Talk") switch on the microphone will override all siren functions. The volume control for the microphone and radio rebroadcast shall have an adjustable volume control that is easily adjustable without the need to open the ARM.

✓

2.4.0 WARRANTY:

2.4.1 The system specified shall be warranted to the user to be free of defects of material or workmanship for a minimum period of two (2) years from date of purchase.

✓

2.4.2 The amplifier shall be warranted for a minimum period of five (5) years.

✓

2.4.3 Written proof of this warranty shall be provided with bid.

✓

3. HANDHELD PROGRAMABLE SIREN AND LIGHT CONTROL SYSTEM (TIER 3)

3.1.0 The emergency vehicle siren and light control system shall be as specified below and shall be the Whelen HHS2200 Siren or equivalent. All major components must be designed and manufactured in the United States of America. Bids that contain major components manufactured outside the United States of America are not acceptable.

✓

3.2.0 SIREN AMPLIFIER:

3.2.1 The Programmable remote siren system shall consist of a Handheld control with a three (3) progressive push button switch and nine (9) non-progressive push button switches, and a combined electronic siren amplifier and relays in (1) module. It utilizes a small single phone style connector that plugs into the amplifier/relay module as described as follows.

✓

3.3.0 CONTROL HEAD

3.3.1 The handheld control head shall be supplied with all necessary mounting hardware. The unit shall be no larger than 1.12 inches deep (including slide switch) x 5.3 inches high x 2.25 inches wide (excluding mounting hardware).

✓ _____

3.3.2 The control head must incorporate a single circuit board design equipped with a solid silicon rubber overlay for maximum moisture resistance from water or beverage spills. Each switch will also produce a "click" sound when pushed On/Off as positive feedback method that the switch has been changed. Control heads that do not have this feature are not acceptable since the driver would have to take his eyes off the road to determine if the switch is operating. The handheld control head must include a microphone with a push-to-talk switch located on the left side of the unit.

✓ _____

3.3.3 Each Tactile switch must be backlit in Green, must change color to Red when activated and must provide enough light to allow it to be seen in bright daylight without washing out. Units that are not backlit or which do not change color when activated are not acceptable. Each of the push button switches shall have its own backlit legend tab. This will help in identifying the functions that are in use.

✓ _____

3.3.4 There shall be more than (225) legends to choose from. A Windows based program shall allow full custom set-up configuration of each of the twelve (12) buttons to control all lights and siren functions, including the ability to enable and disable functions. Siren/Switch systems that are not completely programmable are not acceptable.

✓ _____

3.3.5 The default setting shall be as follows:

The control head shall have three(3) On/Off progressive switches across the *FIRST* row:

✓ _____

Button 1 activates Outlet 1

✓ _____

Button 2 activates Outlets 1 and 2

✓ _____

Button 3 shall activate Outlets 1, 2 and 3, with the option of operating the siren via a dip switch located on the amplifier module

The *SECOND* row shall contain three (3) siren switches:

Button 4 activates the siren's Hands-Free mode. In this mode, the "wail" tone is activated but the horn ring, or Push Button 5. This will also activate Outlet 9.

Button 5 with button 4 active, button 5 (or the horn ring) will cycle from "wail" to "yelp". If button 4 inactive button 5 will generate a tone that ramps up and sustains a specific pitch until the button is released.

Button 6 will activate an airhorn until released.

The siren contains a *THIRD* row of three (3) switches.

Button 7 shall produce a "wail" tone. Pressing button 5 will change the tone to "yelp".

Button 8 will activate radio rebroadcast.

Button 9 will cycle through Outlet 4,5, 4+5, and deactivates 4+5.

The *FOURTH* row of three (3) switches with pushes shall operate as follows:

Button 10 activates output 6

Button 11 activates output 7

Button 12 activates output 8.

To deactivate all functions, press and hold any button for more than two (2) seconds.

3.4.0 AMPLIFIER/RELAY MODULE (ARM):

- 3.4.1 The aluminum housing of the ARM shall have built-in mounting feet that shall be built into the design of the assembly for superior strength, and includes all necessary mounting hardware. The amplifier shall measure approximately 8.082 inches wide x 7.275 inches deep x 2.56 inches high. ✓
- 3.4.2 The ARM operates on a 12 volt negative ground automotive electrical system. The amplifier shall be designed to operate from 10V to 16V and shall be reverse polarity protected to ensure that the unit will not be damaged if polarity is reversed. ✓
- 3.4.3 The siren shall be capable of operating one (1) or two (2) 100 watt speakers and must meet Class "A" requirements with most 100 watt speakers. If the siren speaker(s) or any speaker wires are shorted, the siren amplifier will shutdown (via fuse) to avoid damage to the circuitry until the short circuit is removed. ✓
- 3.4.4 In the Hands-Free mode, the siren shall be in a "Stand By" state (Button 4 activated), awaiting electronic commands. The siren will progressively change from Wail to Yelp by simply tapping the horn ring only once, each time. This eliminates the need for one-handed driving while fumbling for the siren controls (both hands stay on the wheel, and eyes are on the road at all times). ✓
- 3.4.5 The ARM shall consist of two (2) parts: a Top and a Bottom aluminum housing which fits together in a clamshell design. This design will assure ease of service to all internal components in a non-stacking PC board design. Designs that require stacking of PC boards are unacceptable, since it is very difficult to easily service the unit. ✓

3.4.6 The unit shall be supplied complete with a handheld control with a noise-cancelling microphone. A three (3) ft. coiled cord and a twenty (20) ft. extension cable shall be provided. The PTT ("Push To Talk") switch on the microphone will override all siren functions. The microphone and radio rebroadcast circuits shall have an "adjustable Preset" volume control that is recessed in the side of the amplifier for ease of adjustment without the need to open the ARM.

✓ _____

3.5.0 WARRANTY:

3.5.1 The siren system shall be warranted by the manufacturer to the user directly to be free from defects of material or workmanship for a period of 24 months from the date of purchase. The siren amplifier shall be warranted for a period of five (5) years from date of purchase. Written proof of this warranty by the manufacturer must be furnished by the bidder and attached to the bid.

_____ ✓

3.5.2 The manufacturer shall provide a 24 month warranty on both parts and factory labor. This shall include 48 hour factory turnaround repair service. Out-of-warranty product shall receive the same quality service and be repaired at a flat service rate of \$75.00, which includes shipping/handling fee for each unit returned (excluding new or necessary hardware such as lenses, flash tubes, etc.).

_____ ✓

3.5.3 The successful bidder must be the manufacturer or an authorized stocking distributor for Whelen Engineering Company or equivalent, and stock sufficient quantities of service parts to maintain the needs of the department within forty-eight (48) hours after call.

_____ ✓

4. SWITCHED CONTROL CENTER

4.0.1 The switched control center shall be as specified below.

4.1.0 DESIGN:

4.1.1 The housing of the control center shall be constructed of steel/metal and shall have a black-epoxy finish, measuring no larger than 2-1/4 inches high x 6 inches wide x 4-3/4 inches deep. Control centers that are larger than these dimensions are not acceptable.

✓ _____

4.1.2 The switched control center shall consist of a pre-wired control box with a minimum of six (6) rocker style or push button switches, which illuminate when function controlled is in use.

✓ _____

4.1.3 The control center shall have a legend window with backlight directly below or above each switch for easy visibility in any light. There shall be a minimum of fifty (50) legend tabs supplied with the control center.

✓ _____

4.1.4 The control center shall have a backlight circuit which can be connected to the vehicle's dimmer switch to control the backlight intensity of the unit.

✓ _____

4.1.5 The control center shall be fully wired, with one (1) single pole - single throw 40 amp and five (5) single pole - single throw 20 amp rocker style or push button switches. Switches shall be fused independently with spade-type fuses which are to be located on a fuse strip on the rear of the unit.

✓ _____

4.1.6 The control center shall utilize a "captive" style terminal block located on the rear of the unit for securing the wiring of devices controlled by the control center.

✓ _____

4.1.7 The control center shall be constructed to be immune to radio frequency interference (RFI) and electromagnetic interference (EMI). The system shall be constructed in a manner to not create any radio frequency interference (RFI) and electromagnetic interference (EMI).

✓ _____

4.2.0 MOUNTING:

4.2.1 There shall be a universal bail bracket mount (black in color) supplied with the control center for mounting.

✓ _____

4.3.0 WARRANTY:

4.3.1 The system shall be warranted by the manufacturer to the user directly to be free from defects of material or workmanship for a minimum period of two (2) years from date of purchase. Written proof of this warranty by the manufacturer must be furnished by the bidder and attached to the bid.

✓ _____

5. SIREN SPEAKER

5.0.1 The Siren Speaker with mounting bracket shall be as specified below. The speaker must be designed and manufactured in the United States of America, including the housing and mounting bracket.

✓ _____

5.1.0 DESIGN:

5.1.1 The electronic speaker must utilize a multi-port reentrant design, which produces higher sound levels as well as clear sound. Single or dual reentrant speakers are unacceptable.

✓ _____

5.1.2 The siren speaker must meet or exceed SAE requirements for a "Class A" speaker when used with a standard siren amplifier. The speaker must produce a minimum sound level of 120 to 122 dB at 10 feet. Siren speakers that do not produce a minimum of 120 dB are not acceptable.

✓ _____

5.1.3 The speaker shall be made of a polycarbonate or solid aluminum in a black non-corrosive finish and be of compact size, measuring no larger than 6-1/4 inches H x 6-1/2 inches W x 3-1/4 inches D. Speakers that are larger than these dimensions are not acceptable.

✓ _____

5.1.4 The siren speaker shall have only two main parts: the housing that contains the Projector, resonant chamber and reentrant parts; and the speaker driver.

✓ _____

5.1.5 The speaker shall utilize a high efficiency 100 watt driver. This will allow for a maximum sound output and clarity. Driver must be easily replaceable by the end user. Units that require that the speaker be sent to a service center for repair are unacceptable.

✓ _____

5.1.6 The 100 watt driver shall be compressed style and shall bolt on to the Projector. The driver shall not be of threaded throat style, since this type may either untwist over the course of time and cause speaker failure, or seize together due to oxidation, thereby becoming impossible to repair or replace.

✓ _____

5.2.0 MOUNTING:

5.2.1 A variety of speaker mounting brackets (minimum 15) must be available for most late model vehicles. A complete list of these mounting brackets must be provided with the bid. Speakers with only a few vehicle-specific mounting brackets are unacceptable because of the wide range of vehicles the department utilizes.

✓ _____

5.2.2 There shall be one (1) speaker bracket supplied with each speaker, which shall be designated at the time of order.

✓ _____

5.3.0 WARRANTY:

5.3.1 The speaker driver must have a minimum of a two (2) year warranty. A copy of the manufacturer's official warranty statement must be supplied with the bid

✓ _____

6. LED LIGHTBAR

6.0.1 The emergency lightbar as requested herein shall be as specified below and shall be the Whelen LFL Liberty Super-LED Lightbar or equivalent. All electronics shall be contained inside the lightbar. There shall be no mechanical drive motors, chains, belts, or gears. The lightbar shall be based on a standard production model of the manufacturer. Official printed product literature clearly explaining all necessary features of the lightbar as contained in this bid, as well as an official printed "Warranty Policy" stating both warranty/non-warranty terms and conditions, is required for this bid. All major components must be designed and manufactured in the United States of America, including LED panels, I/O cards, etc. Bids that contain major components manufactured outside of the United States are not acceptable.

✓ _____

6.0.2 The main structure of the lightbar shall be of heavy gauge extruded aluminum top and bottom, and must be designed for superior structural strength. Lightbars with plastic polycarbonate tops are not acceptable. The lightbar shall house all electronic components. The lightbar shall measure approximately 49.75 inches in length with a maximum height of 2.55 inches and a maximum width of 12 inches, excluding mounting brackets. The lightbar must have Hi/Low power control of all LED modules. Lightbars that do not offer this feature are not acceptable. ✓

6.0.3 The lightbar shall contain one (1) control module I/O board which shall contain all the electronics required to operate all internal lighthoods. This single module is required for ease of servicing the lightbar. Lightbars with multiple boards are unacceptable. ✓

6.0.4 Each I/O card shall produce a high energy envelope of four (4) pulses to each LED head at a rate of 75 envelopes per minute per head. There shall be a minimum of twelve (12) flash patterns to choose from. Each pair of linear LED lamps must be capable of activating independently of each other. ✓

6.0.5 The I/O Card shall drive the LED light heads offering Hi/Low capabilities. The Halogen Lighthoods shall operate from the I/O board allowing the takedowns and alleys to both steady burn and flash, and permitting the alleys to be controlled individually. The Traffic Advisor will only require two (2) wire control (no control head) when operated from the I/O board. The linear LED corners will be capable of a cruise light application. The lights will remain activated at a low power level, producing a cruise light mode. Lightbars without these features are not acceptable. ✓

6.0.6 The lightbar's primary warning shall have a maximum of four (4) linear LED modules [1 in each corner] that meets SAE Class I requirements. Lightbars that utilize more than four modules to meet SAE Class I requirements are not acceptable. *A copy of the Testing Lab or AMECA Certificate confirming that the lightbar conforms to SAE Class I requirements is required with this bid. Failure to submit this document will disqualify the bidder.* Lightbars that do not use Linear LED's as primary warning are not acceptable. The lightbar shall have linear LED modules in the four corners. Each Linear LED corner module shall consist of a minimum of twelve (12) LED's permanently mounted within a single "removable" highly mirrored parabolic reflector for maximum light output. Corner light modules that utilize multiple reflectors or mirrors are not acceptable since they do not provide a true even light spread. The twelve (12) LED's shall be mounted in a straight line and have a single diffuser panel mounted in front of them for maximum light output. ✓

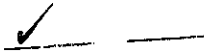
6.0.7 The I/O module shall be 100% solid state with built-in reverse-polarity protection and output-short protection. They shall operate from 10-16 VDC with no degradation in flash rate, and shall operate through a temperature range of -22 degrees Fahrenheit to 140 degrees Fahrenheit. The lightbar shall be designed to have up to eight (8) lamps to the front, eight (8) lamps to the rear, and one (1) on each end. Each lamp module position shall have a choice of five (5) single-layer colored lens sections, independent of the others. The lenses shall be constructed of polycarbonate with built-in spreader optics and a horizontal non-fluted strip across the center of each lens for maximum light output at the "zero" H-V point. The LED panel must be mounted within the lightbar. Systems in which the LED panel/lens assembly makes up the outside configuration of the lightbar (clear outer lenses and colored inner filters) are not acceptable. ✓

6.0.8 The lightbar shall have:

Six (6) Linear LED's to the front (Blue)

Eight (8) inboard Linear LED's to the rear
(1 Red/1 Amber/6 Blue) ✓

6.0.9 All inboard linear LED panels shall be of the same design. All inboard lighthoods must be of the same series LED's whether LED or halogen to allow for placement of these lighthoods in any inboard position. All LED modules must produce a minimum 180 degree light pattern. LED panels that do not produce significant light output at 45 degrees are not acceptable. The lightbar shall also contain Lightbar Options listed below. No substitute options will be accepted.



6.0.10 The lightbar must utilize lenses that may be replaced without removing the lightbar from the roof of the vehicle. It is preferred that the lenses slide into a track and be held in place by two end caps that secure to the lightbar via four screws each. Lightbars that utilize domes held in place by clips are unacceptable as the domes will allow sunlight to wash out the warning light, and clips can fail over time. The outer lens color shall be clear. The use of clear outer domes with colored filter is not acceptable.



6.0.11 The lightbar shall contain a mounting kit to adapt the lightbar to most late model vehicles, and there shall be a "high-rise" mount available to raise the lightbar approximately five (5) inches to improve the rear view of the lightbar on vehicles with varying roof contours.



6.1.0 LIGHTBAR OPTIONS

6.1.1 Option #2 (Takedowns):

The lightbar shall contain two (2) 27 watt (minimum) halogen lamps that must allow for steady burn, as well as flashing takedowns. The halogen lamps shall be snap-in style and must be mounted inside the lightbar in a deep-dish, highly mirrored reflector for maximum light output. The two (2) halogens shall come "ON" together as take-downs or alternately flash, and must be controlled by the lightbar's I/O board.



6.1.2 Option #3 (Alley Lights):

The lightbar shall contain two (2) MR11 halogen lamps that must allow for independent control of each lamp in a steady burn mode, and shall alternately flash. The halogen lamps shall be mounted inside the lightbar by snap-in style and must be mounted in a deep-dish, highly mirrored reflector for maximum light output. The two (2) MR11 halogens must be controlled by the lightbar's I/O board.



6.2.0 WARRANTY

6.2.1 The system shall be warranted by the manufacturer to the user directly to be free from defects of material or workmanship for a minimum period of two (2) years from date of purchase, with the exception of optical plastic parts and halogen bulbs. LED's shall be warranted for a minimum period of five (5) years. Written proof of this warranty by the manufacturer must be furnished by the bidder and attached to the bid.

✓ _____

6.2.2 The manufacturer shall provide a minimum two (2) years warranty on both parts and factory labor. This shall include forty-eight (48) hour factory turnaround repair service. Out-of-warranty product shall receive the same quality service and be repaired at a flat service rate, which includes a shipping/handling fee for each unit returned (excluding new or necessary hardware such as lenses, flash tubes, etc).

✓ _____

6.2.3 The successful bidder must be the manufacturer or an authorized stocking distributor of the product, and shall stock sufficient quantities of service parts to maintain the needs of the department within forty-eight (48) hours after call.

✓ _____

7. LED LOW PROFILE INTERIOR LIGHTBAR

7.0.1 The low profile LED Interior Warning Light shall be as specified below and shall be the Galls LED Interior Warning Light or Mallimar Warning Phantom Model ULB42-BB-WV-2, manufactured by Star Headlight & Lantern Co., Inc. or equivalent. The unit must be completely designed and manufactured in the United States of America. No major subassemblies manufactured offshore shall be utilized. This includes, but is not limited to, housings, LED PC boards, lenses, etc.

✓ _____

7.1.0 BASIC STRUCTURAL DESIGN:

7.1.1 The device shall be housed in a heavy duty polycarbonate housing. The unit shall appear to be void of color until the LED's are turned on. The unit must be supplied with universal mounting brackets for ease of mounting to most vehicles

✓ _____

7.1.2 The device shall be no shorter than 42 inches and no longer than 45.50 inches in length, no more than 1-1/8 inches in height, and no more than 7.00 inches in width; and be designed to fit snugly to the windshield to prevent flash back into the passenger compartment.

✓

7.2.0 WARNING LAMP MODULES:

7.2.1 The device shall contain a minimum of ten (10) Blue LED panels. Each panel shall utilize high intensity LED's (Light Emitting Diodes). The unit must have a minimum of eight (8) wide angle Linear-LED modules facing straight out of the housing and two (2) Linear-LED modules at 45 degrees. These LED's shall have a life expectancy of at least 100,000 hours. Each LED panel shall utilize a minimum of twenty four (24) LED's.

_____ ✓

7.2.2 Each light head shall contain a minimum of twenty four (24) individual LED's in two rows of twelve (12) that have a life expectancy of at least 100,000 hours.

_____ ✓

7.2.3 The maximum amperage draw in any mode shall be no more than 1 amp at 12.8 volts DC. The amp draw is critical because the unit is designed to be used in a parked vehicle with its ignition off for long periods of time.

✓ _____

7.2.4 The LED Interior Warning light shall include a minimum eight (8) foot power cable with a cigarette style plug.

_____ ✓

7.2.5 The LED Interior Warning light shall be equipped with two (2) buttons (one to turn on/off the unit, and one to control the 27 warning patterns) installed in the housing in a location readily accessible to the operator of the vehicle.

_____ ✓

7.3.0 WARRANTY:

7.3.1 The system specified shall be warranted to the user to be free of defects of material or workmanship for a minimum period of seven (7) years from date of purchase.

_____ ✓

7.3.2 LED panels shall be warranted for a minimum period of seven (7) years. Written proof of this warranty shall be provided with bid.

_____ ✓

8. LED INTERIOR REAR DECK LIGHT

8.0.1 The interior lighthouse shall contain one (1) LED lighthouse as specified below and shall be the Whelen Talon Model: TLNCV5BB or equivalent, and must be supplied with all standard mounting hardware. All major components such as LED panels, housings, and lenses must be designed and manufactured in the United States of America or the bid will be considered non-responsive.

_____ ✓

8.1.0 REAR DECK LED LIGHTHEAD:

8.1.1 The system shall contain two (2) LED modules (BLUE), each of which contain a minimum of six (6) individual LEDs (Minimum Generation 3.5) that are mounted in a single highly polished reflector in a straight line and having a design to provide considerable light at a 90 degree angle. Units that do not utilize this linear design in a single reflector are unacceptable. The two (2) Blue panels shall each contain its own clear outer lens for a stealth look, and shall be mounted in a black polycarbonate housing for long life and durability. The units will be mounted inside the passenger compartment; therefore, for passenger safety, units that are housed in metal housings are unacceptable. The unit shall come complete with a glamour cap and mounting bracket to allow the unit to be mounted around the vehicle's third brake light and eliminate flash back.

_____ ✓

8.1.2 There shall be a minimum of fourteen (14) flash patterns to choose from, along with Hi/Low power; both of which must be controlled by an external wire. The unit will have a non-volatile memory and stay in the pattern selected until changed by the operator.

_____ ✓

8.1.3 The assembly shall be no larger than 19.5 inches long x 2.6 inches high with the mounting bracket, and 5.8 inches deep with the shroud. The lighthouse shall be molded polycarbonate with rounded over corners. Units made of a metal substance or with non-rounded corners are unacceptable.

_____ ✓

8.2.0 WARRANTY:

8.2.1 The system shall be warranted by the manufacturer to the user directly to be free from defects of material or workmanship for a minimum period of two (2) years from date of purchase (It shall be understood that no warranty is offered on optical plastic parts). LED modules shall be warranted for a minimum period of five (5) years. Written proof of this warranty by the manufacturer must be furnished by the bidder and attached to the bid.

✓ _____

8.2.2 The manufacturer shall provide a minimum two (2) years warranty on both parts and labor. This shall include forty-eight (48) hour factory turnaround repair service. Out-of-warranty product shall receive the same quality service and be repaired at a flat service rate, which includes a shipping/handling fee for each unit returned (excluding new or necessary hardware such as lenses, flash tubes, etc.)

✓ _____

8.2.3 All successful bidders must be an authorized stocking distributor for the manufacturer of the product line, and stock sufficient quantities of service parts to maintain the needs of the department within 72 hours after call.

✓ _____

9. SURFACE MOUNT DIRECTIONAL LED ASSEMBLY (TIER-1)

9.0.1 The LED assembly shall be the Whelen TIR3 Super-LED, Model RSB03ZCR or equivalent. The assembly shall be a self-contained directional LED lighthouse assembly containing a minimum of three (3) LED's and shall come complete with a built-in flasher and with all standard mounting hardware and brackets to mount the unit to any flat surface. The unit must be completely designed and manufactured within the United States of America. No major subassemblies manufactured offshore shall be utilized.

✓ _____

9.1.0 DESIGN:

9.1.1 The directional head assembly shall be supplied with an aluminum mounting plate and a black flange as standard and will be completely sealed for long life and durability. The unit must be designed to mount to any flat surface.

✓ _____

9.1.2 The lighthouse assembly shall measure a maximum 3.6 inches long x 1.3 inch protrusion, x 1.3 inches high, larger units will not be accepted. Size is a major issue due to specific mounting location needs of the agency

✓ _____

9.1.3 The directional head assembly shall have an LED panel which contains a minimum of three (3) individual Blue LED's (Minimum Generation 3.5) in a straight row that have a life expectancy of at least 100,000 hours. The panel shall contain ballast and TIR lens, and shall be mounted to an aluminum base, and must be completely encapsulated for long life and durability. The unit shall draw no more than 25 amps.

✓ _____

9.1.4 There must be four (4) wires exiting the unit, one for each of the following: Power, Ground, Flash Pattern and Synchronize. The Flash Pattern wire will allow a choice of five flash patterns and steady burn options to choose from. Each of the five patterns shall have a Phase 1 and Phase 2. When using multiple lighthouses, the synchronized wires are attached to simultaneously or alternately flash Phase 1 and Phase 2 of each of the five patterns. The unit will have a non-volatile memory and stay in the pattern selected. Units that do not have a synchronization feature are not acceptable.

_____ ✓

9.1.5 The lens must be made of clear polycarbonate and must have a smooth outer lens (for self cleaning) with built-in optics for horizontal mounting to insure maximum light output. The lens must be permanently imprinted with the appropriate SAE number.

✓ _____

9.2.0 MOUNTING OPTIONS:

9.2.1 The specified LED panels shall come with all standard mounting hardware and brackets to mount the unit to any flat surface.

✓ _____

9.2.2 At a minimum the following additional mounting assemblies shall be available:

✓ _____

Aluminum bracket to measure a maximum of 4.0 inches long x 1.37 inch protrusion x 1.6 inches high.

✓ _____

Black polycarbonate with a chrome finish and shall measure a maximum of 3.6 inches long x .625 protrusion x 1.3 inches high.

Black polycarbonate designed to hold two (2) LED panels (as specified) for surface mount application and shall measure a maximum of 3.6 inches long x .625 protrusion x 2.5 inches high. ✓

Aluminum grille mounting bracket that fits one (1) LED panels (as specified) for the Ford Crown Victoria. The bracket must be easily installed in the grille area of the vehicle, with dimensions of 3-3/4 inches Length x 2-1/8 Height x 1 inch Depth. The bracket will be supplied with all hardware to insure proper installation. ✓

9.3.0 WARRANTY:

9.3.1 LED modules shall be warranted for a period of five (5) years. Written proof of this warranty by the manufacturer must be furnished by the bidder and attached to the bid. ✓

9.3.2 All successful bidders must be an authorized distributor for the product bid and stock sufficient quantities of service parts to maintain the needs of the department within twenty-four (24) hours after called. ✓

10. SURFACE MOUNT DIRECTIONAL LED ASSEMBLY (TIER-2)

10.0.1 The LED assembly shall be the Whelen TIR6 Super-LED, Model 50B03ZBR or equivalent. The LED assembly shall be a self-contained directional LED lighthouse assembly containing a minimum of six (6) LED's and shall come complete with a built-in flasher and with all standard mounting hardware and brackets to mount the unit to any flat surface. The unit must be completely designed and manufactured within the United States of America. ✓

10.1.0 DESIGN:

10.1.1 The directional head assembly shall be built with an aluminum backing plate and will be completely sealed for long life and durability. The unit must be designed to mount to any flat surface and shall come with all necessary mounting hardware and brackets to mount the unit to any flat surface.

✓ _____

10.1.2 The lighthouse assembly shall measure a maximum 5 inches long x 1 5/8 inch high. Size is a major issue due to mounting locations.

✓ _____

10.1.3 The directional head assembly shall have an LED panel which contains a minimum of six (6) individual Blue LED's (Minimum Generation 3.5) in a staggered row that have a life expectancy of at least 100,000 hours. The panel shall contain ballast and LED lens, and shall be mounted to an aluminum base. The unit shall draw no more than 50 amps.

✓ _____

10.1.4 There must be four (4) wires exiting the unit, one for each of the following: Power, Ground, Flash Pattern and Synchronize. The Flash Pattern wire will allow a choice of five flash patterns and steady burn options to choose from. Each of the five patterns shall have a Phase 1 and Phase 2. When using multiple lighthouses, the synchronized wires are attached to simultaneously or alternately flash Phase 1 and Phase 2 of each of the five patterns. The unit will have a non-volatile memory and stay in the pattern selected. Units that do not have a synchronization feature are not acceptable.

_____ ✓

10.1.5 The lens must be removable, made of clear or blue polycarbonate and must have a smooth outer lens (for self cleaning) with built-in optics for horizontal mounting to insure maximum light output. The lens must be permanently imprinted with the appropriate SAE number.

✓ _____

10.2.0 MOUNTING OPTIONS:

10.2.1 The LED assembly shall come with all standard mounting hardware and brackets to mount the unit to any flat surface.

✓ _____

10.2.2 There must also be available an aluminum grille mounting bracket that fits one LED assembly as specified for easy installation of the assembly into the grille area of a Ford Crown Victoria.

✓ _____

10.3.0 WARRANTY:

10.3.1 LED modules shall be warranted for a period of five (5) years. Written proof of this warranty by the manufacturer must be furnished by the bidder and attached to the bid.

✓ _____

10.3.2 All successful bidders must be an authorized distributor for the product bid and stock sufficient quantities of service parts to maintain the needs of the department within twenty-four (24) hours after called.

✓ _____

DPS 1011 Emergency Vehicle Lighting Equipment					
Item #	Description	Quantity	Model #	Unit Price	Extended Price
1	Siren and Light Control System (Tier-1)	100	ETSA380MF	\$ 239. ⁰⁰	\$ 23,900. ⁰⁰
2	Siren and Light Control System (Tier-2)	100	ETSA 380R	\$ 359. ⁰⁰	\$ 35,900. ⁰⁰
3	Handheld Programmable Siren and Light Control System (Tier-3) Available spring 2010	100	ETSA380HR	\$ 299. ⁰⁰	\$ 29,900. ⁰⁰
4	Switched Control Center	100	ETSP6S	\$ 139. ⁰⁰	\$ 13,900. ⁰⁰
5	Siren Speaker	100	ETSS100C	\$ 99. ⁰⁰	\$ 9,900. ⁰⁰
6	LED Lightbar	100	ETL5000	\$ 99. ⁰⁰	\$ 99,900. ⁰⁰
	Option #1 - Takedown Lights	100	ETLTD	\$ 39. ⁰⁰	\$ 3,900. ⁰⁰
	Option #2 - Alley Lights	100	ETLA	\$ 39. ⁰⁰	\$ 3,900. ⁰⁰
7	LED Low Profile Interior Lightbar	100	EPL800	\$ 499. ⁰⁰	\$ 49,900. ⁰⁰
8	LED Interior Rear Deck Light	100	EPRDFCWS	\$ 185. ⁰⁰	\$ 18,500. ⁰⁰
9	LED surface Mount Assembly (Tier-1)	100	EL3SN	\$ 40. ⁰⁰	\$ 4,000. ⁰⁰
10	LED surface Mount Assembly (Tier-2)	100	EPROSSMBDB	\$ 80. ⁰⁰	\$ 8,000. ⁰⁰
Total					\$ 301,600.⁰⁰

Failure to use this form may result in disqualification.

Bidder / Vendor Information:

Name: West Virginia Signal & Light, Inc.
 Address: PO Box 134
Kenna, WV 25248
 Phone#: 304-372-9648
 Email Address: vancef@hughes.net

Contract Coordinator Information:

Name: Vance Fitzsimmons
 Address: Same
 Phone#: 304-372-9648
 Email Address: vancef@hughes.net

* Quantities are estimated annual usage for bidding purposes and bidder's information

State of West Virginia VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with *West Virginia Code*, §5A-3-37. (Does not apply to construction contracts). *West Virginia Code*, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

- 1. **Application is made for 2.5% resident vendor preference for the reason checked:**
 Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
- 2. **Application is made for 2.5% resident vendor preference for the reason checked:**
 Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
- 3. **Application is made for 2.5% resident vendor preference for the reason checked:**
 Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
- 4. **Application is made for 5% resident vendor preference for the reason checked:**
 Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
- 5. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
 Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
- 6. **Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:**
 Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (*West Virginia Code*, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: West Virginia Signal : Light, Inc
Date: 12/11/09
Signed: Vance Filgsum
Title: Sales Engineer

*Check any combination of preference consideration(s) indicated above which you are entitled to receive

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:

West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:

If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code*. The vendor must make said affirmation with its bid submission. Further, public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the *West Virginia Code* and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the *West Virginia Code* may take place before their work on the public improvement is begun.

ANTITRUST:

In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:

Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.

Under penalty of law for false swearing (*West Virginia Code* §61-5-3), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

Vendor's Name: West Virginia Signal & Light, Inc.
Authorized Signature: *Vance Ferguson* Date: 12/11/09

West Virginia Signal & Light, Inc.

Siren:

- 1.01 Yes
However the Federal Signal PA640 is *not* a remote like is stated on the spec
- 1.1.0 Yes
- 1.1.2 Yes
- 1.1.3 Yes
- 1.1.4 Yes
- 1.2.1 Yes
- 1.2.2 Yes
- 1.2.3 Yes
- 1.2.4 No-There is no low intensity feature on the SoundOff ETSA380R
- 1.2.5 No-We have push button siren controls
- 1.2.6 No-The SoundOff ETSA380R does not scroll through tones
- 1.3.1 Yes
- 1.3.2 Yes
- 1.3.3 Yes
- 1.3.4 Yes
- 1.3.5 Yes
- 1.4.1 Yes
- 1.4.2 No, we carry a 3-year warranty on our amplifier
- 1.4.3 Yes

Siren:

- 2.1.1 Yes
- 2.1.2 Yes
- 2.1.3 Yes
- 2.2.1 Yes
- 2.2.2 Yes
- 2.2.3 Yes
- 2.2.4 No-No low intensity
- 2.2.5 Yes
- 2.2.6 No-No hands free
- 2.3.1 Yes
- 2.3.2 Yes
- 2.3.3 Yes
- 2.3.4 Yes
- 2.3.5 No
- 2.3.6 Yes
- 2.3.7 Yes
- 2.3.8 Yes
- 2.4.1 Yes
- 2.4.2 No-Our ETSA380R has a 3-year warranty
- 2.4.3 Yes

Hand Held Siren:

- 3.1.0 Yes
- 3.2.1 No **8-non progressive pushbuttons and 3-progressive pushbutton controls**
- 3.3.1 Yes
- 3.3.2 Yes
- 3.3.3 Yes
- 3.3.4 Yes
- 3.3.5 Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- 3.4.0 Yes
- 3.4.2 Yes
- 3.4.3 Yes
- 3.4.4 No-Not a hands free mode
- 3.4.5 Yes
- 3.4.6 Yes
- 3.5.1 No-3-Year warranty on everything
- 3.5.2 Yes
- 3.5.3 Yes

Switch Box:

- 4.1.1 Yes
- 4.1.2 Yes
- 4.1.3 Yes
- 4.1.4 Yes
- 4.1.5 Yes
- 4.1.6 Yes
- 4.1.7 Yes
- 4.2.1 Yes
- 4.3.1 Yes

Speaker:

5.0.1 Yes

5.1.1 Yes

5.1.2 Yes

5.1.3 Yes

5.1.4 Yes

5.1.5 Yes

5.1.6 Yes

5.2.1 Yes-Universal mounting brackets come standard with the SoundOff Signal ETSS100C speaker, making them compatible with 100s of vehicles. We also have vehicle specific brackets for the Crown Vic, Charger, Impala, and Tahoe.

5.2.2 Yes

5.3.1 Yes

Lightbar:

6.0.1 Yes

6.0.2 Yes

6.0.3 Yes

6.0.4 Yes

6.0.5 Yes

6.0.6 No SoundOff Signal's ETL5000 has a minimum of 132 generation 3 LEDs per module) We have 4 LED corner modules (12 LEDs per module).

6.0.7 Yes

6.0.8 No SoundOff Signal's ETL5000 has a minimum of 132 generation 3 LEDs per module) We have 4 LED corner modules (12 LEDs per module).

6.0.9 Yes

6.0.10 Yes

6.0.11 Yes

6.1.1 Yes

6.1.2 Yes

6.2.1 Yes

6.2.2 Yes

6.2.3 Yes

Interior Lightbar:

7.0.1 Yes

7.1.0 Yes

7.1.2 Yes

7.2.1 No

SoundOff Signal's EPL8000 Interior Lightbar utilizes 8 generation 3 LEDs per module (8-modules total). The Phantom is not a Linear

- 7.2.2 No Bar, and they have Generation 1 LEDs. The EPL8000 will be at least twice as bright as what is specified. SoundOff Signal's EPL8000 Interior Lightbar utilizes 8 generation 3 LEDs per module (8-modules total). The Phantom is not a Linear Bar, and they have Generation 1 LEDs. The EPL8000 will be at least twice as bright as what is specified.
- 7.2.3 Yes
- 7.2.4 No This bar is designed to be installed permanently, so no cigar plug is necessary.
- 7.2.5 No This bar is designed to be hooked up to a Siren or Switch box
- 7.3.1 No 5-Year warranty
- 7.3.2 No 5-Year warranty

3rd Brake Light Warning System:

- 8.0.1 Yes
- 8.1.0 No Not a linear design-SoundOff Signal invented this style of light and utilizes brighter LED technology
- 8.1.2 No No hi-low intensity
- 8.1.3 Yes
- 8.2.1 Yes
- 8.2.2 Yes
- 8.2.3 Yes

LED3 Surface Mount Warning:

- 9.0.1 Yes
- 9.1.1 Yes
- 9.1.2 Yes
- 9.1.3 Yes
- 9.1.4 No SoundOff Signal's EL3SN(X) incorporates only a 3-wire system, where one wire runs both the flash pattern selection and the synch technology, making it easier to install
- 9.1.5 Yes
- 9.2.1 Yes
- 9.2.2 Yes
- 9.3.0 Yes
- 9.3.2 Yes

Surface Mount Warning

- 10.0.1 Yes
- 10.1.1 Yes
- 10.1.2 Yes
- 10.1.3 Yes

10.1.4 No **SoundOff Signal's EPRDSSMDB(X) incorporates only a 3-wire system, where one wire runs both the flash pattern selection and the synch technology, making it easier to install**

10.1.5 Yes

10.2.1 Yes

10.2.2 Yes

10.3.1 Yes

10.3.2 Yes

West Virginia Signal & Light

11/09/09

RFQ# DPS1011

Lights/emergency & trouble automotive

- | | | |
|----|--------------|-----------------------------------|
| 1 | ETSA380MF | Made in U.S.A.
3-year Warranty |
| 2 | ETSA380R | Made in U.S.A.
3-year Warranty |
| 3 | ETSA380HR | Made in U.S.A.
3-Year Warranty |
| 4 | ETSP6S | Made in U.S.A.
1-Year Warranty |
| 5 | ETSS100C | Made in U.S.A.
3-Year Warranty |
| 6 | ETL5000 | Made in U.S.A.
5-Year Warranty |
| 7 | EPL8000 | Made in U.S.A.
5-Year Warranty |
| 8 | EPRDFPCWS(X) | Made in U.S.A.
5-Year Warranty |
| 9 | EL3SN(X) | Made in U.S.A.
5-year Warranty |
| 10 | EPRDSSMDB(X) | Made in U.S.A.
5-Year Warranty |

This documentation states that the above product from SoundOff Signal is made in the U.S.A. The above warranties mentioned in the products listed are true and valid according to SoundOff Signal

Mike Cranmer
Northeast Regional Sales Manager
Phone: 616-662-6119
Fax: 616-896-1286

West Virginia Signal & Light
11/09/09
2010 Bid for West Virginia State Police

01

ETSA380MF

8-Programmable buttons
3-position slide switch
Directional arrow indicator
Diagnostic voltage indicator
5-position rotary switch for siren tone selection
Single arrow control button
100-watt output
3-year warranty
Made in U.S.A.
Universal mounting bracket
Backlit buttons

02

ETSA380R

8-Programmable buttons
3-position slide switch
Directional arrow indicator
Diagnostic voltage indicator
5-position rotary switch for siren tone selection
Single arrow control button
Dual tone 100-watt output
3-year warranty
Made in U.S.A.
Universal mounting bracket
Backlit buttons
Voltage range of face plate: 9-30 volts
Operating temp: -40 to +65 degrees Celsius
Radio rebroadcast: push button with LED indicator
Communication Interface: (2) RJ-45 for serial communications connectors
Remote face plate dimensions: 6.9" l x 3.5" h x 1.2" d
Voltage range of amplifier: 10-30 volts
Amplifier dimensions: 9" l x 3" h x 6" deep

03

ETSA380HR

Individually fused outputs
Radio re-broadcast with LED indicator
6-pushbuttons with selectable legends and on/off indicators
3-push buttons for level control
Cradle controller mount
Single button alley light option
Splash proof controller
Amber LEDs for arrow indicator
Air horn
Manual push buttons
Single tone button with scroll
Standby button
Low current standby
Diagnostic indicator
Backlit-Green
2-100 watt outputs
10-30 colt
DSC compatible
Under voltage/Over voltage, short circuit, and over temp. shutdown
Programmable PA volume control
Gun lock timer
2 arrow control
8-10 amp outputs for push button
3-20 amp outputs for level switch control
Reverse polarity
SAE J1849 Class A/CA Title 13 Compliant
25-foot cable
Park Kill Input
Horn Ring
Ignition Input
Auxiliary Input
3-Year Warranty
Made in U.S.A.

04

ETSP6S

6 position switch box
6 rocker style switches
Illuminates when on
Aluminum housing
Backlit legends
Universal bale bracket
No RMI or EMI interference
1 40-amp switch
5 20 amp switches
Made in U.S.A.
1-year warranty

05

ETSS100C

100 watt speaker
Made in U.S.A.
3-Year warranty
SAE Class A certified
Universal mounting bracket included
120 db output
6.75w x 6.625h x 2.3125 d

06

ETL5000

5-year warranty

Made in U.S.A.

132 Generation 3 LEDs

Each LED inboard module has 6 generation 3 LEDs
6 Led modules to the front, 8 LED modules to the rear

Each LED corner module has 12 generation 3 LEDs
4 corner LED modules

SAE certified

Clear when off, colored when on

Aluminum housings

Low profile mounting brackets

Vehicle specific hook kits

Current on inboards-0.5 amps/each inboard

Current on corners-1.0 amps/each inboard

Operating temperature of -40 to + 65 degrees Celsius

Each module is a weather sealed module that plugs directly into the electronic control assembly

Halogen Alley Lights

1-year warranty

Made in U.S.A

MR-11 Halogen bulbs

Halogen Takedown Lights

1-year warranty

Made in U.S.A.

Dual MR-11 Halogen bulbs in each takedown module

2 Takedown modules in each ETL5000 Lightbar

07

EPL8000

8-generation 3 LED modules

Each module consists of 6 generation 3 LEDs

5-year warranty

Clear when off, colored when on

Aluminum housing

Shrouded to prevent flashback

Visor mount brackets

23 warning patterns

Current draw of 0.5 amps per modules

38.96" long, 1.38" high, 5.51" deep

Extremely low profile to prevent drive obstructed views

Made in U.S.A.

SAE certified

08

EPRDFPCWS(X)

2 generation 3 LED light heads
Each light head consists of 6 generation 3 LEDs
Each light head is mounted on either side of the 3rd brake light
The unit is covered by a vehicle specific shroud to prevent flashback
5-year warranty
Made in U.S.A.
19.22" Long
Rounded corner shrouds
Clear when off, colored when on
SAE certified

09

EL3SN(X)

Aluminum housing (chrome, black, or white)
3-generation 3 LEDs
33 flash patterns
Made in U.S.A.
5-year warranty
Surface mountable
Synch technology allows you to synchronize up to 4 lights
Scratch resistant polycarbonate lens
Grille brackets included
2.5" long, 1.375" high
Clear when off, colored when on
SAE certified

10

EPRDSSMBDB(X)

Aluminum housing (chrome, black, or white)
6-generation 3 LEDs
Built in flasher
33 flash patterns
Made in U.S.A.
5-year warranty
Surface mountable
10-30 volt
Synch technology allows you to synchronize up to 4 lights
Scratch resistant polycarbonate lens
4.5" long, 1.25" high
SAE certified
Clear when off, colored when on

Sirens

Item # 1

GOOD BETTER BEST
PRODUCT RATING



380 Series Professional Siren #ETSA380MF

- 11 programmable outputs! Programmable Slide Switch with three outputs and eight Programmable Push Buttons
- Output options include:
 - Alternate Action (ON/OFF)
 - Momentary Action
 - 8 Second Delay for Gun Lock Timer
 - plus 2 outputs have independent connections to allow for high side or low side switching.
- Single Button Arrow Control (left right & center out)
- Radio Rebroadcast
- Single Button Arrow Control (left, right & center out)
- Push Buttons feature 10 amps/output (50 amps maximum for outputs 1 - 6 combined).
- High durability Rubber Membranes cover push buttons for maximum wear and tear and customizable legend is included to clearly label your buttons.
- LED Arrow Indicator displays Left Arrow, Right Arrow and Center Out.
- Tone selection is controlled with a robust 5 Position Rotary Switch
- Loud clear 100 watt output.
- 3 popular tones; Wail, Yelp and Piercer.
- Manual and Horn override buttons.
- Park Kill feature kills the siren upon placing the vehicle in Park or by closing the door and Horn Ring input (both are programmable for high side or low side switching).
- Diagnostic LED Indicator warns of over voltage, under voltage and over current issues.

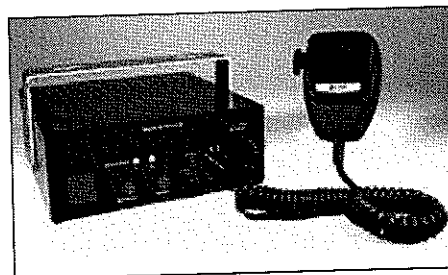
GOOD BETTER BEST
PRODUCT RATING

100 Series 8 Function Siren #ETSA100E



- 5 Warning Tones: Piercer, Yelp, Wail, Hi Lo & Super Hi Lo plus Public Address Manual & Radio Rebroadcast.
- Our most economical siren offering to date.
- Microchip sound control - tones designed to match industry standard or easily modified to meet your requirements (custom tones)
- 2 - 100 watt outputs
- Easy to service with convenient access to user selectable jumpers without removing cover
- "Park Kill" feature disables siren while vehicle is in the Park position
- Made in the U S A

7" w x 2 75" h x 6.75" d



GOOD BETTER BEST
PRODUCT RATING

300 Series Multi-Function Siren #ETSA300MF

- 5 Warning Tones.
- Microchip sound control - tones designed to match industry standard or easily modified to meet your requirements (custom tones).
- 4 Integrated Auxiliary Output Switches @ 20 amps/output.
- 3 Position Slide Switch @ 20 amps/output
- 2 - 100 watt outputs
- Easy to service with convenient access to user selectable jumpers without removing cover
- "Park Kill" feature disables siren while vehicle is in Park position
- Made in the U S A

GOOD BETTER BEST
PRODUCT RATING

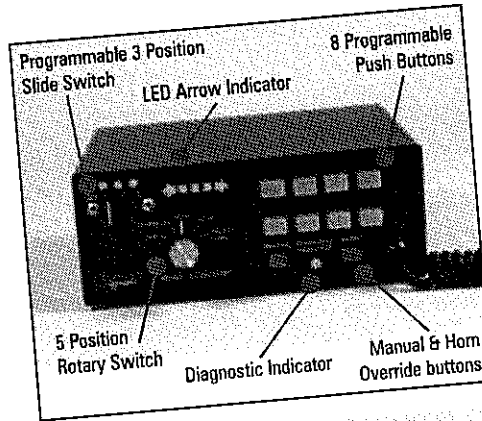
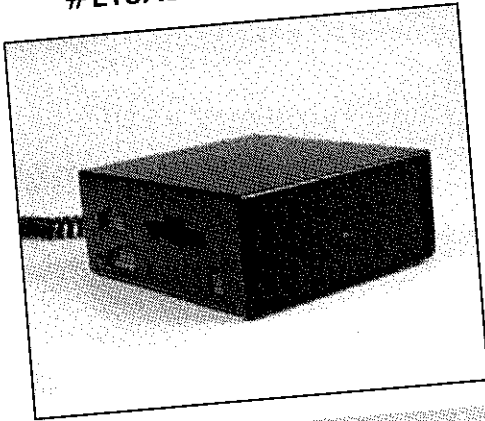
Sirens - 380 Professional & 100, 300 & 700 Series

7" w x 2.75" h x 6.25" d



380 Series Professional Siren
#ETSA380MF

NEW!
380 Remote
Coming Soon

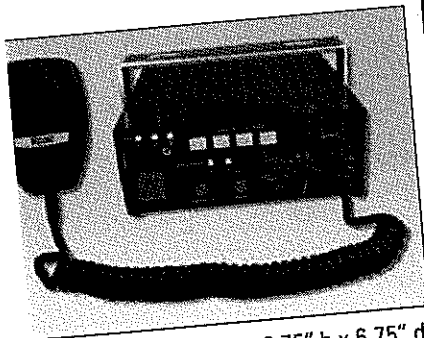


GOOD BETTER BEST
PRODUCT RATING

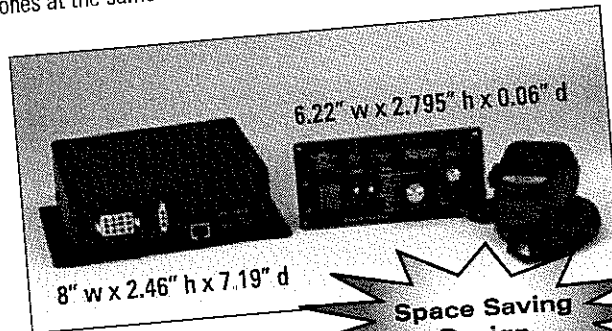
700 Series Remote Dual Tone Siren
#ETSA700R



- 5 Warning Tones: Piercer Yelp, Wail Hi Lo & Super Hi Lo plus Public Address, Manual & Radio Rebroadcast
- Ability to broadcast two tones at the same time with independent speaker outputs.
- Easy console mounting.
- 2 - 100 watt outputs.
- "Park Kill" feature disables siren when vehicle is in Park.
- Made in the U.S.A



7" w x 2.75" h x 6.75" d



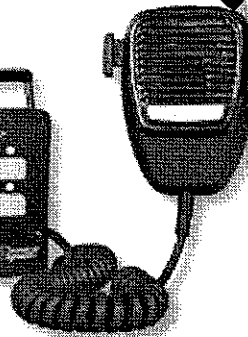
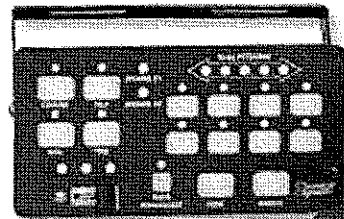
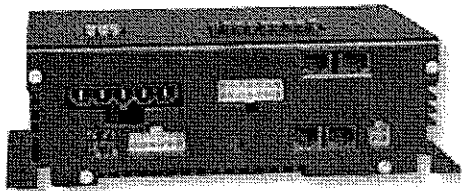
Space Saving
Design

1-800-338-7337 / www.soundoffsignal.com

Item #2

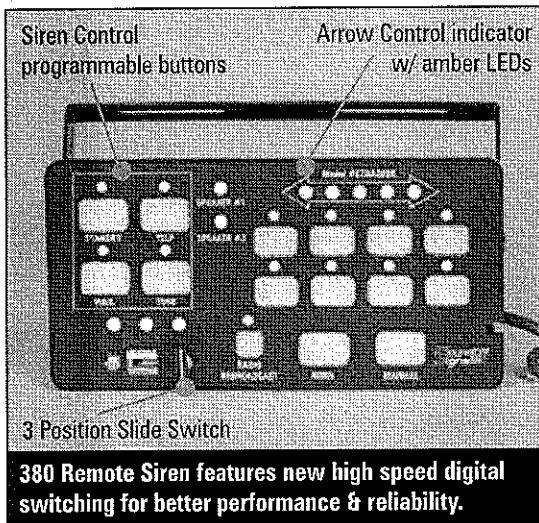


380 Series Remote
Dual Tone Professional Siren
#ETS380R



**NEW
Product
Release**

(PLEASE SEE REVERSE FOR TECHNICAL SPECIFICATIONS)



GOOD BETTER BEST

PRODUCT RATING

- New 380 Series Remote Siren with Class D technology with high speed digital switching provides higher efficiency, less current draw & better reliability.
- Two installation options for the faceplate; bail bracket or a recessed mount (remove bracket). Amplifier can be mounted in any remote location in the vehicle, such as the trunk.
- Broadcast two tones at the same time with independent speaker outputs. May be used with 1 or 2 speakers, each with 100 watt output.
- High durability rubber membrane push buttons for maximum wear & tear Siren control with 4 push buttons with programmable Wail & Yelp plus 1 user selectable, programmable tone. Also features dedicated Radio Rebroadcast (w/ LED indicator), Horn & Manual override buttons Peel n' Stick button labels included.
- Easily view activated Arrow pattern with amber LED indicator.
- 8 programmable push buttons with 10 amps per output for on/off, arrow bar, lightbar, gun lock, auxiliary lighting, takedowns, alley lights, headlight & taillight flashers, trunk release or camera system control.
- Three position slide switch features 20 amps per output.
- Mappable push buttons to slide switch allows user to program push buttons to turn on when slide switch is changed.
- Diagnostic Indicator warns of over voltage, under voltage, over temperature and over current problems.
- "Park Kill" feature disables the siren when the vehicle is in Park

380 Series Remote Siren

**SoundOff
Signal III.**
an employee owned company



1-800-248-7007 / www.soundoffsignal.com

380 Series Remote Siren

TECHNICAL SPECIFICATIONS

CONTROL PANEL

Voltage Range:	9 - 30 Vdc
Current Draw:	100mA @ 12.8 Vdc, 50mA @ 25.6 Vdc
Standby Current:	less than 20mA
Operating Temperature:	-40° to +65° C
Arrow Control:	Single Button (left, right, center out, off) w/ 5 amber LEDs indicate arrow mode
Radio Rebroadcast:	Push button w/ LED indicator
Backlight:	Green LED
Status LEDs:	Red LEDs to show status of relay outputs & speakers
Lever Switch:	3 Position, Programmable Lever Switch
Push buttons:	8 Push buttons - Programmable for ON/OFF, Momentary, 8 Second Delay & Arrow Control
Communication Interface:	2 - RJ-45 for Serial Communications Connectors
Backlight:	Green LED
Mounting:	Bail Bracket (incl.) or Console Mount (flush/recess mount)
Dimensions:	6.9" length x 3.5" height x 1.2" depth (2" high to top of 3 position switch)

AMPLIFIER

Voltage Range:	10 - 30 Vdc
Input Current:	9 amps @ 12.8 Vdc input - 100 watt output, 18 amps @ 12.8 Vdc input - 200 watt output
Operating Temperature:	-40° to +65° C
Reverse Polarity Protection:	25 amp in line fuse
Output Power/Channel:	100 watts regulated output
# of Channels:	2
Discrete Inputs:	Backlight - 10 - 30 Vdc Park-Kill, Horn Ring & Auxiliary (high side or low side activated) - 10 - 30 Vdc Radio Rebroadcast input
Protection:	Yes - under voltage, over voltage & short circuit
Communication Interface:	2 - RJ-45 for Serial Communications Connectors
Connections:	Molex Mini-fit JR 12 pin for discrete inputs & radio rebroadcast, Molex Mini-fit JR 4 pin for speaker outputs
Mounting:	Surface Mount
Dimensions:	9" length x 3" height x 6" depth

RELAY

Voltage Range:	10 - 30 Vdc
Input Current:	120 amps maximum: Slide Switch - 50 amps, Push buttons 1-6 - 50 amps, 7-8 - 10 amps each
Operating Temperature:	-40° to +65° C
Reverse Polarity Protected:	Yes
Slide Switch Relays:	Fused @ 20 amps/output
Push button Switch Relays:	Fused @ 10 amps/output, 6 relays are +V output only, 1 relay is dedicated Arrow Control 2 relays have external power input to allow for high side/low side activation and normally open or normally closed contacts
Communication Interface:	2 - RJ-45 for Serial Communications Connectors
Connections:	Molex Mini-fit SR - Rated @ 50 amps/connection (3 outputs for Level 1, 2 & 3 2 outputs for Level 1-3 & Push buttons 1-6)

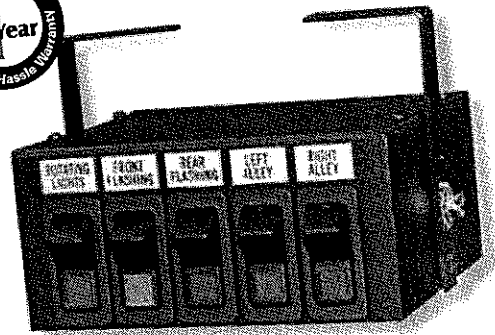


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Switches

500 Series Switch Panel #ETSP5S

- 5 full size rocker style switches
- 1 - 40 amp circuit breaker.
- 4 - 20 amp fused switch outputs.
- Includes 6 interchangeable legends: Wig-Wag, Take down Lights, Strobe Lights, Grille Lights & Aux. 2
- 5 color indicators to easily identify which function is operating: 1 amber, 1 green 1 blue & 2 red.
- Output terminal strip conveniently located on rear of unit.

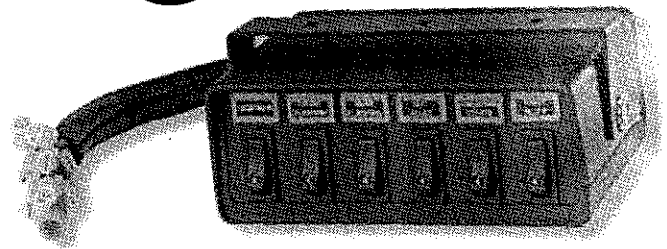


6.125" w x 2.75" h x 5.75" d

Item # 4

600 Series Switch Panel #ETSP6S

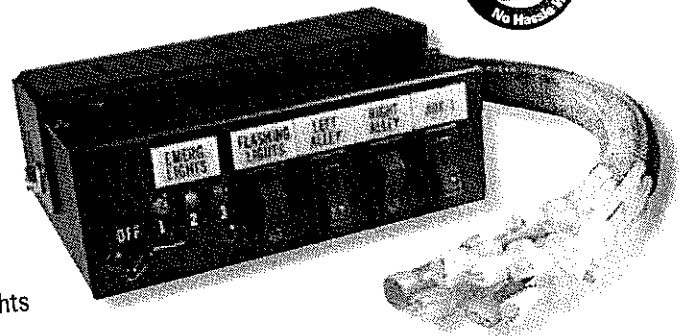
- 6 mini rocker style switches with red LED indicator ON lights.
- 1 - 40 amp relay/circuit breaker.
- 5 - 20 amp fused switch outputs.
- Durable ABS plastic housing.
- Includes interchangeable backlit legend inserts
- 18" Pigtail is used for termination with insulated quick connects.



6.375" w x 2.5" h x 4.9375" d

700 Series Switch Panel #ETSP7S

- 4 Mini Euro style rocker switches with red LED indicators
- 3 position progressive slide switch rated @ 20 amps per output with multi-colored indicator lights.
- 4 - 20 amp fused switch outputs.
- Heavy duty vinyl coated steel housing.
- Includes 6 interchangeable legends: Wig-Wag, Take down Lights, Strobe Lights, Grille Lights, Deck Lights & Aux. 2.
- 18" Pigtail is used for termination with insulated quick connects



6.125" w x 2.125" h x 5.1875" d
Bracket measures 6.436" w x 1.813" h x 1.75" d

GOOD BETTER BEST
PRODUCT RATING

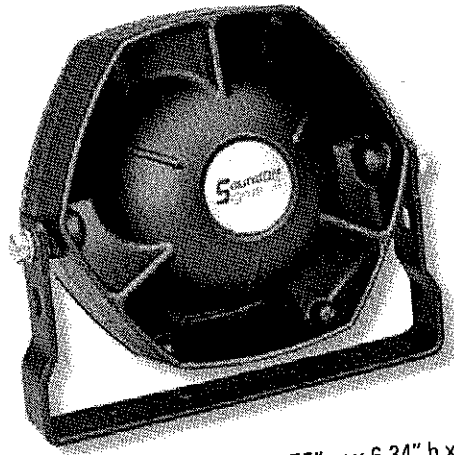


100D Series Professional Speaker #ETSS100D

- Our newest speaker has undergone a series of grueling tests including testing for Dust, High & Low Temperature, Water, Salt & Vibration so you can be sure this rugged speaker will stand up to all kinds of environmental conditions.
- 100 watts of dynamic sound
- Can be mounted horizontally or vertically.
- Specifically designed for narrow & small spaces.
- Super clear voice & sound system.
- Great speaker for high intelligibility communication & signaling applications for emergency, fire & rescue vehicles.
- Easy to install & field replaceable.

Available Brackets:

- Chevrolet Impala '06 & newer #ETSS100DBKPALA
- Chevrolet Tahoe '06 & newer #ETSS100DBKCT
- Dodge Charger '06 & newer #ETSS100BKDC
- Ford Crown Victoria Police Interceptor '05 & newer #ETSS100DBKCV



6.75" w x 6.34" h x 2.96" d

GOOD BETTER BEST
PRODUCT RATING

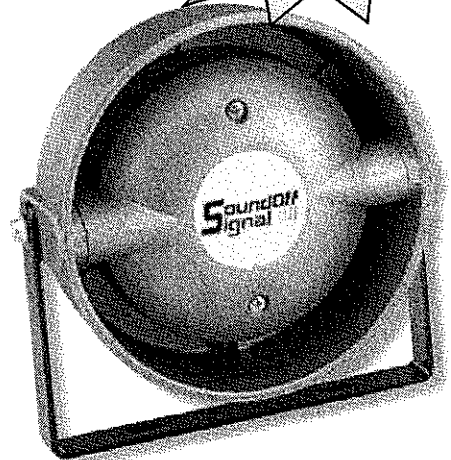
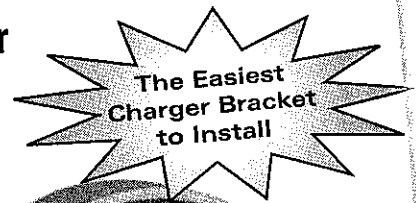


100C Series Neodymium Professional Speaker #ETSS100C

- Delivers clear & powerful sound output with Neodymium high performance magnet.
- Field replaceable & easy to install
- 100 watts of powerful sound.
- Perfect for public address and other high intelligibility communication & signaling applications
- Weatherproof & corrosion resistant cast aluminum housing

Available Brackets:

- Chevrolet Impala '06 & newer #ETSS100BKPALA
- Chevrolet Tahoe '06 & older #ETSS100CBKTH
- Dodge Charger '06 & newer #ETSS100BKDC
- Ford Crown Victoria Police Interceptor '05 & newer #ETSS100BKCV



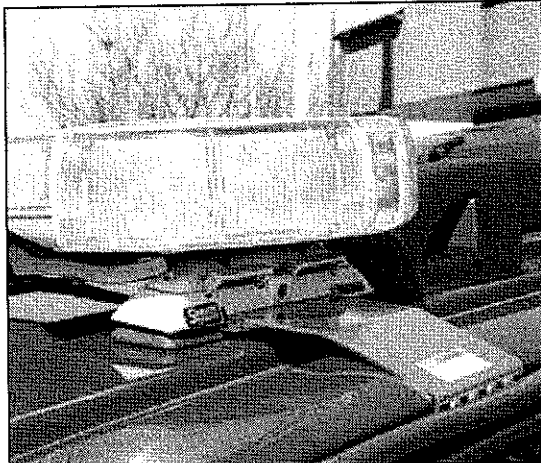
6.75" w x 6.625" h x 2.3125" d

Item # 5

Speakers - 100E, 100V, 100D & 100C Series

ETL 5000 Lightbar (Gen3 LED)

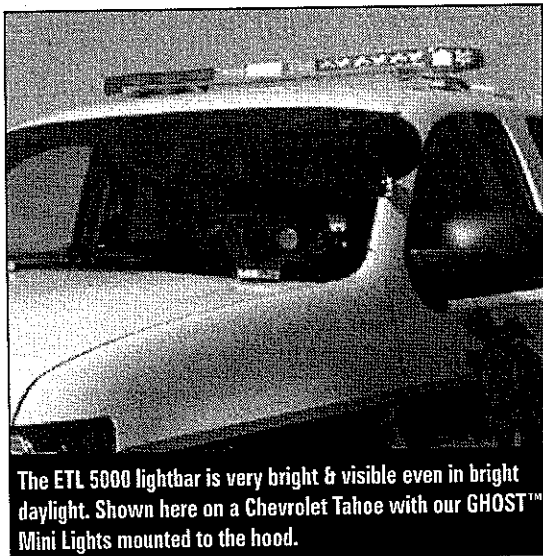
1 800 338 7337 / www.soundoffsignal.com



Adjustable Mount Bracket shown at a low height on a Ford Excursion Fire Command vehicle.



ETL 5000 Lightbar along with various SoundOff warning lights & 100H speaker on a Dodge Charger.



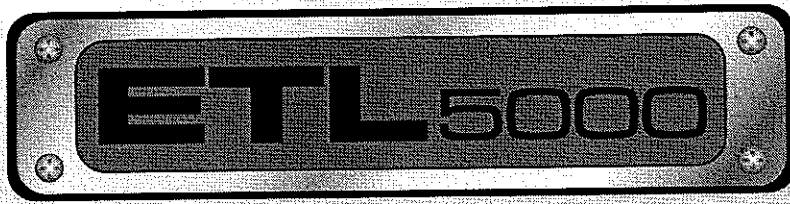
The ETL 5000 lightbar is very bright & visible even in bright daylight. Shown here on a Chevrolet Tahoe with our GHOST™ Mini Lights mounted to the hood.

GOOD BETTER BEST
PRODUCT RATING

Features

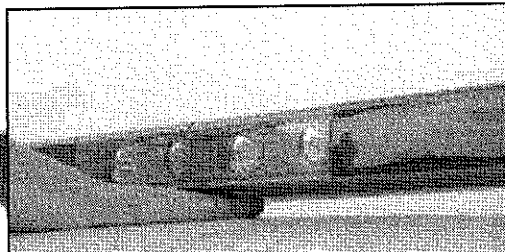
- The most powerful & visible LED lightbar on the market, the ETL 5000 lightbar exceeds SAE light requirements with End Cap output alone!
- An industry innovation... "Split Arrow" option that activates the upper row of LEDs in all the Rear Arrow Modules against the bottom row of LEDs. The upper row offers Warning patterns, while the lower row of LEDs offers Arrow patterns.
- Increased flexibility with 2 Rear Arrow Control Box options; a 4 Wire or 8 Wire. The 4 Wire option includes a built-in Arrow Controller which works with any standard left, right or center out warning switch & is compatible with our Directional Arrow Switch (see pg. 3 & 118). The 8 wire option allows 8 arrow outputs which are compatible with other manufacturer's directional arrow controllers.
- Streamlined, modular design is easy to maintain with field replaceable modules that are easily upgradable.
- Two mounting options to choose from; Adjustable Mount Brackets or the Low Profile Fixed Mount Brackets.
- Innovative Adjustable Mount Brackets allow for custom height & tilt adjustments for especially useful for larger vehicles
- Halogen Takedown/Work lights available (please note: LED versions coming soon, call for details). Takedown lights are installed in the front of the bar on police/rescue vehicles while Work Lights are installed on the rear of the bar for tow/work truck vehicles. Each Takedown/Work Light module contains 2 - bright white 55 watt halogen bulbs for a total of 4 lights
- Alley Lights available in Standard or 15 Degree Forward Facing. The 15 Degree Forward Facing Alley Light casts the light slightly forward for advanced side viewing.
- Two Pattern Modes (see pg. 3 for all Technical Specs):
 - 1) Cruise Mode - set to your favorite pattern
 - 2) Low Power Mode - reduces light output to 30%.



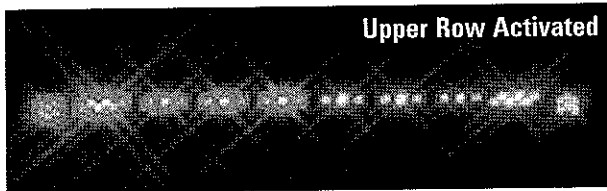


Low Profile Fixed Mount Brackets shown.

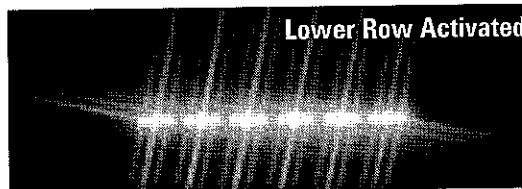
LED Alley & Takedowns Coming Soon!



Low Profile Fixed Mount has a low clearance of just 3/4" on Ford Crown Victoria Police Interceptor vehicles.

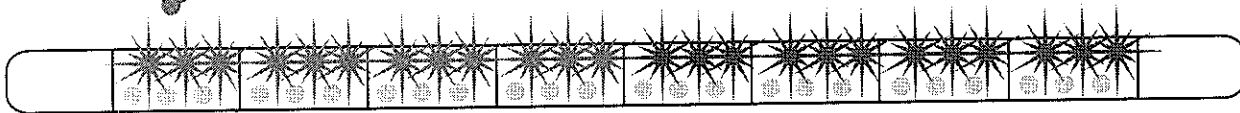


Upper Row Activated

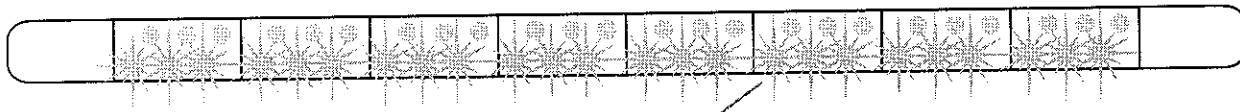


Lower Row Activated

Warning Function in upper row of LEDs will flash together



Arrow Function in lower row of LEDs will flash together

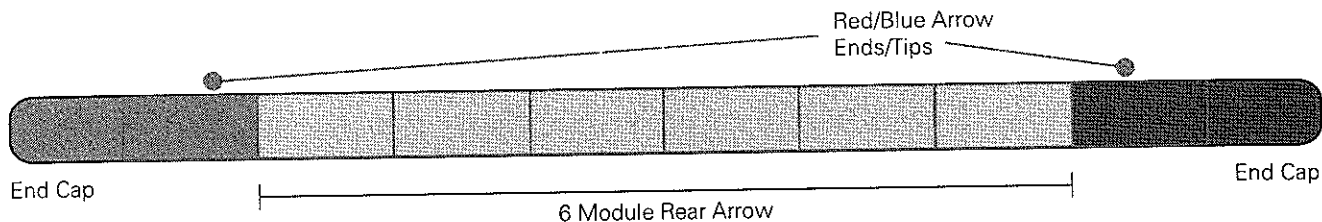


(Rear of lightbar shown)

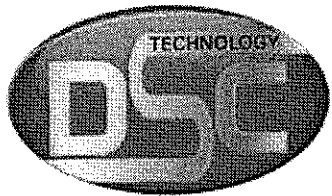
An industry innovation....."Split Arrow" option that activates the upper row of LEDs in all the Rear Arrow Modules against the bottom row of LEDs. The upper row offers Warning patterns and is available in Amber, Blue, Green, Red or White LEDs, while the lower row of LEDs offers Arrow patterns available in Amber LEDs only.

ETL 5000 Lightbar (Gen3 LED)

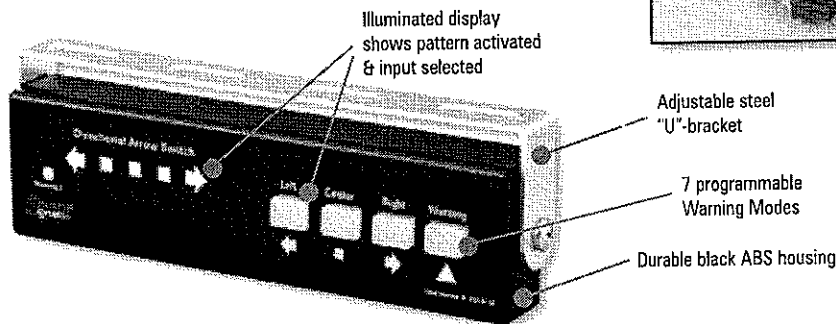
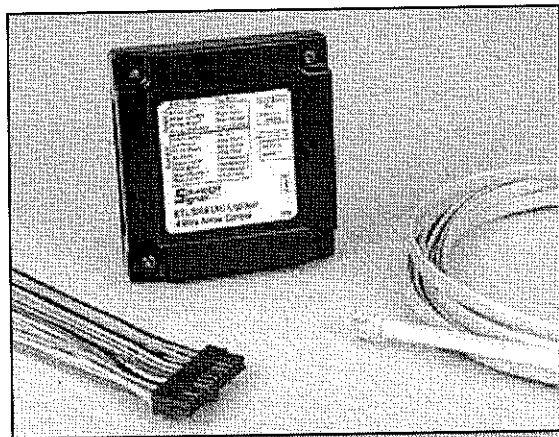
Now you can build your lightbar with a full 6 module Rear Arrow with Red/Blue ends/tips.



TECHNICAL SPECIFICATIONS	
Flash Patterns:	
Standard Warning	18
Halogen Takedown or Alley	5
Arrow Left, Center & Right	4
Arrow Warning	Solid Arrow: 9 Split Arrow: 17
Input Voltage Range:	10-16 Vdc or 10-30
Current Consumption:	
Inboard Module	1 amp max per module
Corner Module	2 amps max per corner module
Alley Light	2.8 amps max per module
Takedown Light	5.6 amps max per module
# of LEDs:	6 - GEN3 LEDs per Inboard Module 12 - GEN3 LEDs per Corner Module
Operating Temperature:	-40° to +65° Celsius
Dimensions:	
Standard Lengths	38.5", 43.25", 48", 52.75" & 57.5"
Custom Lengths	Shorter & longer lengths available in 4.75" increments (call for details)
Inboard Module	4.75" wide x 2.125" height
Corner Module	2.75" overall height

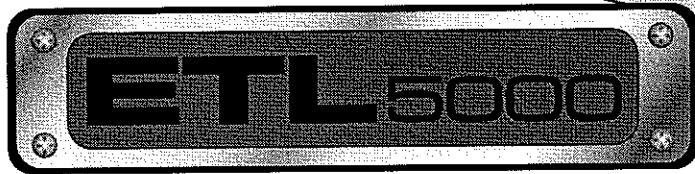


Our DSC Technology (digital serial communication) option gives you a 15' digital serial RJ-11 cable which connects to the Breakout Box that is installed near your switching equipment. The Breakout Box then provides you with 24 separate control lines (inputs) to connect to your switching devices. This thin digital cable eases and reduces installation time and expense.



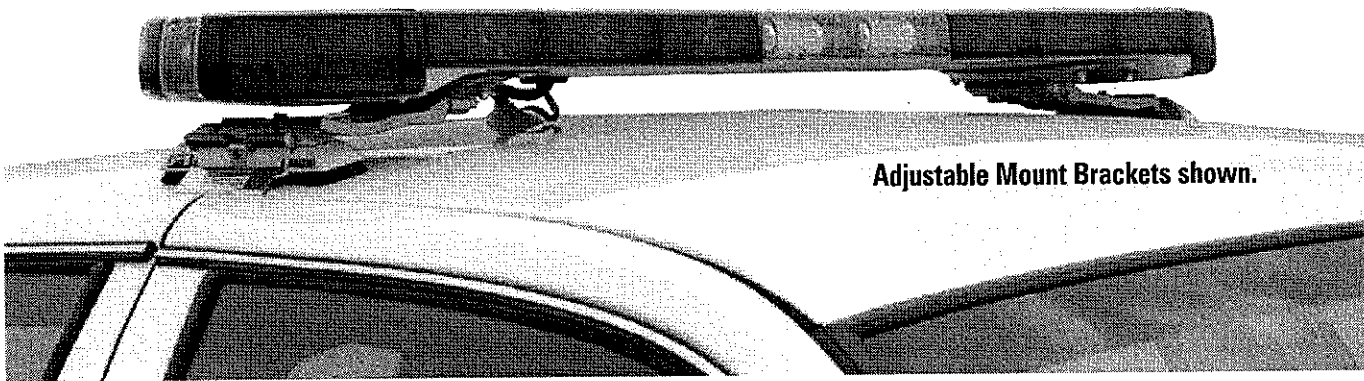
See our full line of Sirens, Speakers & Switches pgs. 117-124

#ETSWDAS01 Directional Arrow Switch is compatible with our ETL 5000 Lightbar w/ 4 Wire Arrow Control option. The Directional Arrow Switch features seven programmable Warning Modes, and a fully lit display that shows flash pattern in use and input selected. Built-in Smart Sensor detects inputs from another switching source, and may be used with other manufacturers Directional Arrow products that use built-in pulsing controllers. For more information see pg. 118



Ask about our ETL 5000 Brochure/Order Form or go to our website at www.soundoffsignal.com/lightbars_index.htm

Our ETL 5000 LED Lightbar was designed from input gathered from public safety professionals throughout the industry and the world. This process accurately defined the need for improved optical and mechanical elements, enhanced ease and speed in maintenance, configuration flexibility, as well as the option to upgrade as technology advances. This methodology provides you and your agency with a heightened level of product refinement, reduced setup and maintenance costs, reduced liability and more importantly, improved safety for public safety personnel and civilians alike.



Adjustable Mount Brackets shown.

Innovative Adjustable Height Brackets allow for custom height and tilt adjustments that allow for more flexibility than any other lightbar mounting system.

The ETL 5000's unique mounting feet allows for vertical height adjustment of 3 inches to provide low mounting height on sedan applications and elevated mounting height for full size van and SUV applications so a single bar has maximum visibility to traffic approaching from the front and the rear. Regardless of your vehicle specification, the ETL 5000 is designed with American ingenuity to allow you to effectively control highway, turnpike, city or rural primary locations while ensuring maximum conspicuity and safety for all.

- Innovative angle adjustment of $\pm 2 \frac{1}{2}^\circ$ allows you to adjust the lightbar to the roof line of your vehicle for maximum visibility (see Diagram A).
- Large rubber mounting pads provide a non-slip, cushioned interface between the vehicle roof and the lightbar.
- Mounting brackets offer vertical height adjustment of 3" (see Diagram B) and are made from aluminum and stainless steel for excellent durability and corrosion resistance.
- Two vehicle attachment methods are provided; standard roof mounting hooks specific to each vehicle or a universal cable and clip method to avoid drilling mounting holes into the vehicle.

Diagram A: Angle Adjustment

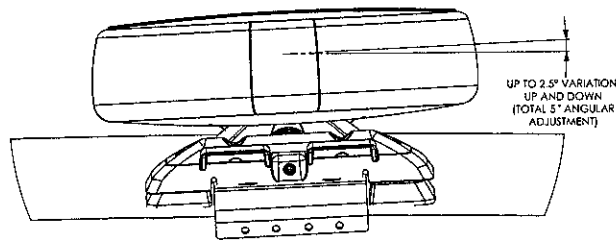
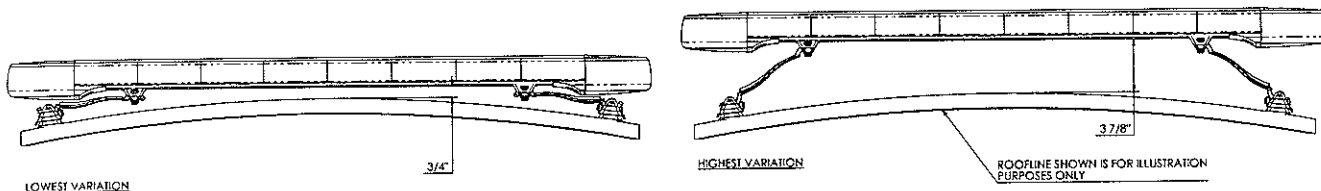


Diagram B: Height Adjustment



NOTE: ELEVATIONS SHOWN WILL VARY DEPENDING ON ARCH OF ROOF (VARIOUS MODELS)

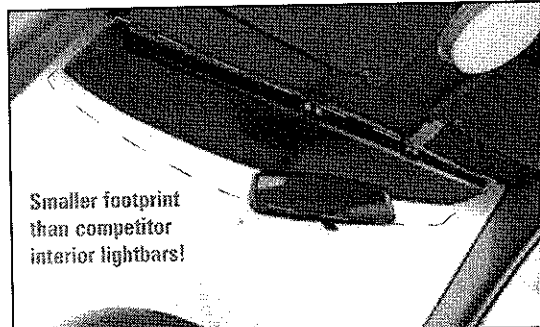
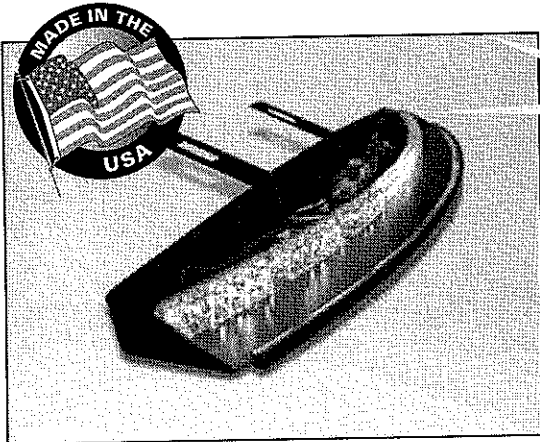
Item #7

PINNACLE

Interior Lightbar

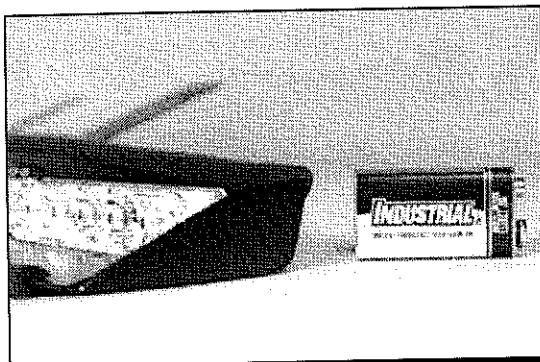
#EPL8000

NEW
Product
Release



Smaller footprint than competitor interior lightbars!

Lightbar is the smallest, tightest fitting interior bar in the market. No flashback and no obstruction.



Small size, just taller than a standard 9 volt battery.

- Built with our new & exclusive "Fusion Technology" optics that disperses an **even distribution of light with a super wide angle output**. The Pinnacle Series also includes a full sized, LED roof top lightbar and a mini LED lightbar.
- **Smaller than competing interior lightbars with less windshield obstruction** (see middle photo at left). Overall smaller footprint frees up valuable windshield space so it is easier to see under and around it.
- No flashback with the sleek & narrow design that allows for a super tight fit against the windshield & headliner.
- Features 8 Fusion Technology Gen3 LED Modules, with a maximum of 2 LED Takedown lights can be ordered.
- Includes vehicle specific brackets for Ford Crown Victoria, Chevrolet Impala, Tahoe & Dodge Charger with 25' of 6-conductor cable.

TECHNICAL SPECIFICATIONS

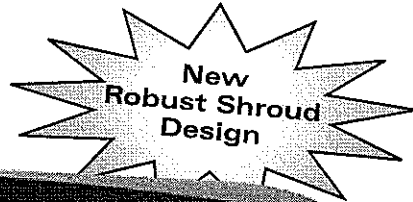
Flash Patterns:	36 Warning, 9 Takedown patterns
Input Voltage Range:	10 - 16 Vdc
Standby Current:	11mA @ 12.8 Vdc (entire lightbar)
Current Draw:	Warning Module - 1.0 Amp peak, 0.5 Amps avg. @ 12.8 Vdc Takedown Module - 0.6 Amps Steady On @ 12.8 Vdc
# of LEDs:	48 Gen3 LEDs
Operating Temperature:	-40° to +65° C
Dimensions:	length x height x depth
Ford Crown Victoria	38.96" l x 1.38" h x 5.51" d
Ford F-150	39.06" l x 1.20" h x 5.98" d
Chevrolet Impala	38.84" l x 0.82" h x 5.92" d
Chevrolet Tahoe	39.02" l x 0.70" h x 4.43" d
Dodge Charger	21" l x 1.50" h x 8.68" d each (2 pc. shroud)

SoundOff
Signal III.
an employee owned company

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Pinnacle Series Interior LED Lightbar

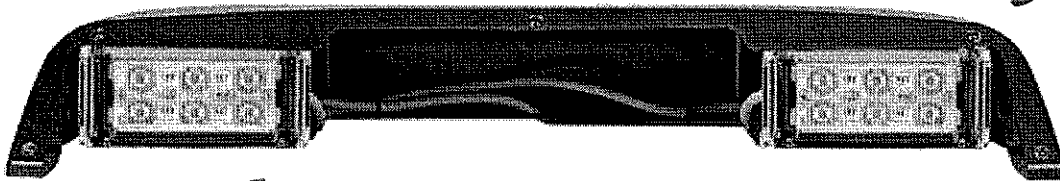
Rev. 1009



GOOD BETTER BEST
PRODUCT RATING

Predator 2™ CHMSL Light
#EP2FPCWS(x)

PREDATOR™
by SoundOff Signal



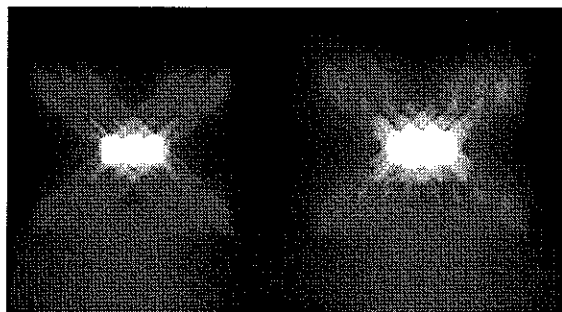
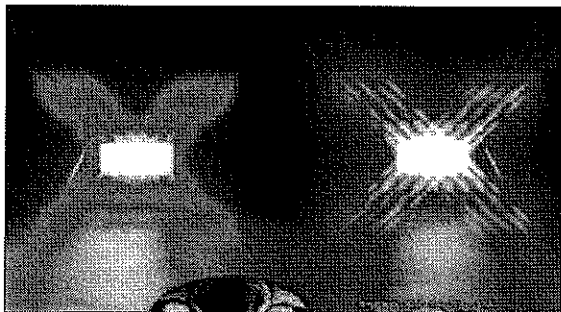
GOOD BETTER BEST
PRODUCT RATING

Predator™ CHMSL Light
#EPRDFPCWS(x)

Item # 8

Extreme Angle Predator 2™ CHMSL light shown illuminated in Red & Blue LEDs. Each module has 8 LEDs for maximum light output and impact.

Predator™ CHMSL light shown illuminated in Blue LEDs. Each module has 6 Gen3 LEDs that cut through tinted windows.



PREDATOR™
by SoundOff Signal

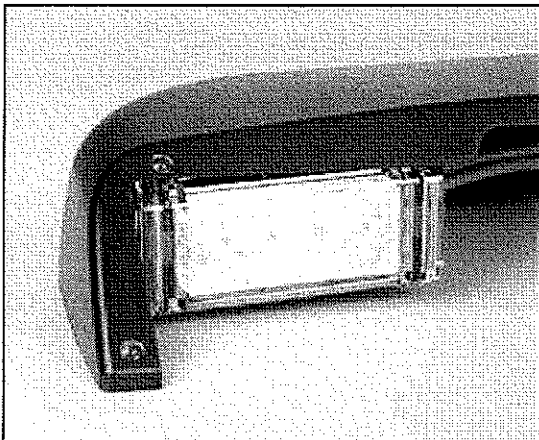
CHMSL Color Options: Replace "(x)" in Part Number with desired color code.

- | | | | |
|---------------|---------------|--------------|---------------|
| A=Amber/Amber | F=Amber/White | K=Red/Amber | P=Green/Amber |
| B=Blue/Blue | G=Green/Green | L=Red/Green | R=Red/Red |
| D=Red/White | H=Green/White | M=Blue/Amber | W=White/White |
| E=Blue/White | J=Red/Blue | N=Blue/Green | |

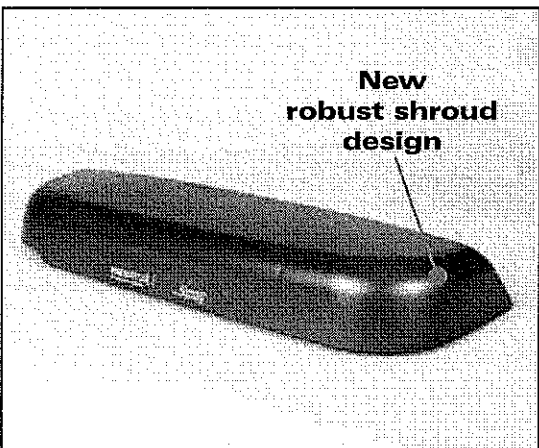
Dash/Decks/Grille - Predator & Predator Gen3 LED CHMSL

1.800.338.7337 / www.soundoffsignal.com

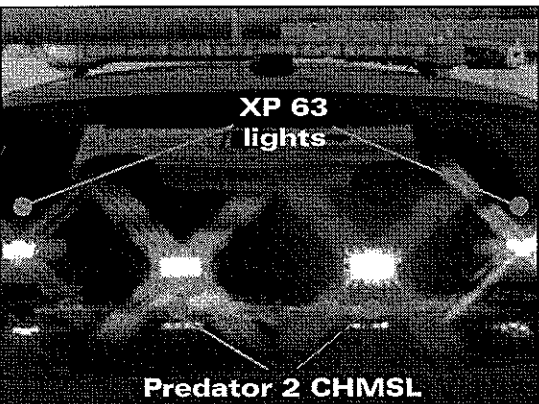
CHMSL Lights (Gen3 LED)



CHMSL lights are now made with our Predator™ & Predator 2™ Dash/Deck/Grille lights.



New improved robust shroud offers a streamlined design with rounded corners and a tight fit against the windshield.



Predator 2 CHMSL mounted in the rear window of a Ford Crown Victoria with XP 63 lights on each side.

Features

- Our CHMSL light is available in your choice of Extreme Angle Predator 2™ or standard Predator light modules.
- Predator 2™ light offers our exclusive "Extreme Angle" visibility for maximum side visibility & impact.
- Light is designed to fit securely over the rear center high mount stop lamp & is visible to oncoming traffic while the trunk is open.
- Gen3 LEDs power through tinted windows and low profile offers warning to oncoming motorists even when the trunk is open
- Sleek, black polycarbonate housing is tamper resistant & keeps wiring safely out of sight.
- Designed to fit Ford Crown Victoria Police Interceptors yet can be used on Chevrolet Impalas & Dodge Chargers by simply cutting the shroud for a custom fit.
- Features Light Sync Technology to synchronize up to four lights to flash simultaneously or alternating Compatible with all other SoundOff Signal Light Sync Technology lights.
- Non-volatile memory recalls last flash pattern used upon power up.
- **NEW Flash Patterns!** Both lights now have 33 built-in flash patterns.

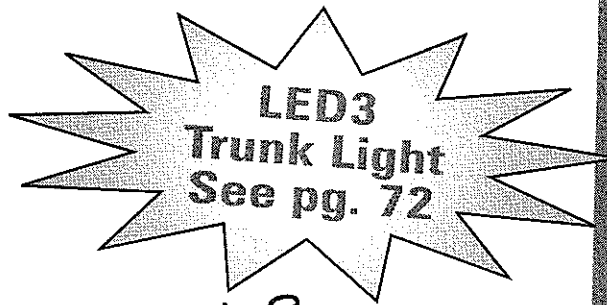
TECHNICAL SPECIFICATIONS	
Flash Patterns:	33 flash patterns
Input Voltage Range:	
Predator™	10 - 16 Vdc
Predator 2™	10 - 30 Vdc
Current Consumption:	1.1 to 2.0 amps (pattern dependent)
# of LEDs:	
Predator™	12 Generation 3 LEDs
Predator 2™	16 Generation 3 LEDs
Light Sync Technology:	Yes
Operating Temperature:	-40° to +65° C
Dimensions:	length x height x depth
	19.22" l x 2.89" h x 7.38" d



LED3

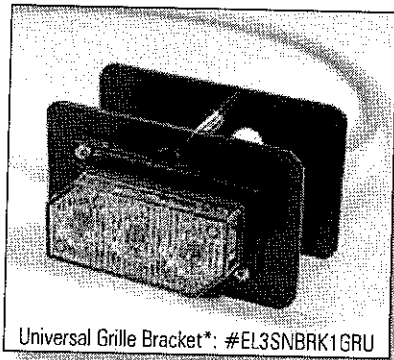
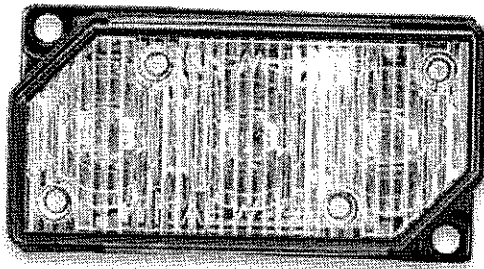
MINI LIGHT

by SoundOff Signal

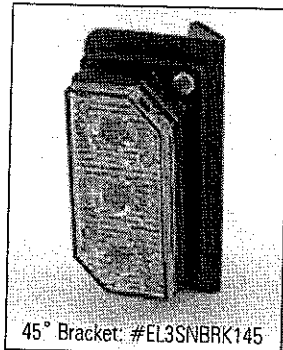


Item # 9

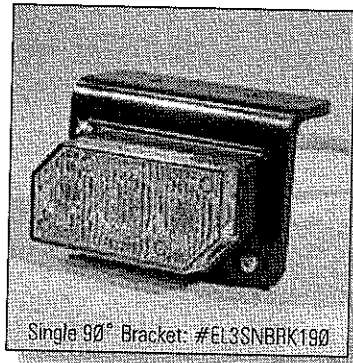
LED3 Mini Light
 10-16 Vdc: #EL3SN(x)
 10-30 Vdc: #EL3SN3Ø(x)



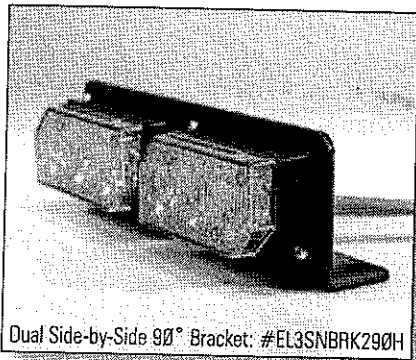
Universal Grille Bracket*: #EL3SNBRK1GRU



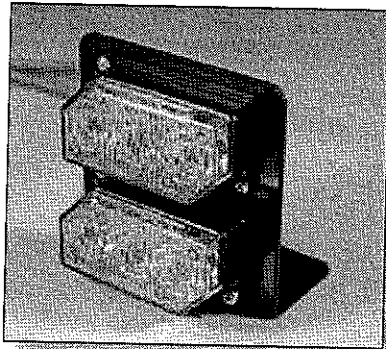
45° Bracket: #EL3SNBRK145



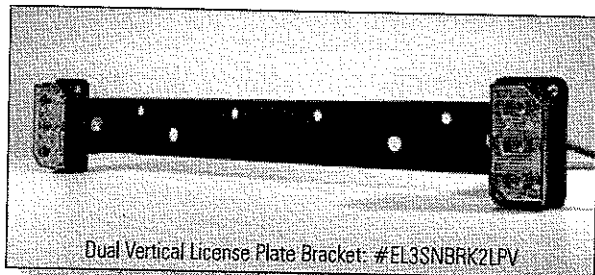
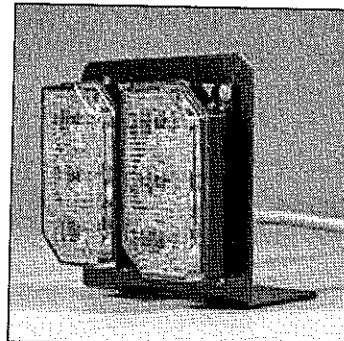
Single 90° Bracket: #EL3SNBRK19Ø



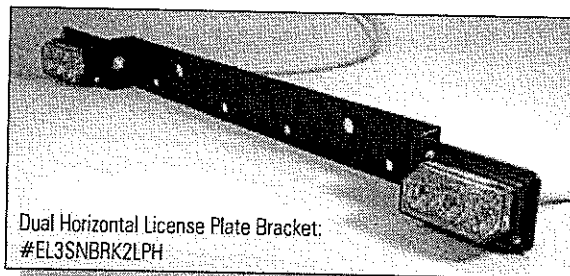
Dual Side-by-Side 90° Bracket: #EL3SNBRK29ØH



Dual Stacked 90° Bracket: #EL3SNBRK29ØV (lights can be mounted vertically or horizontally)



Dual Vertical License Plate Bracket: #EL3SNBRK2LPV



Dual Horizontal License Plate Bracket: #EL3SNBRK2LPH

All brackets sold as EACH (1).

*Universal Grille Bracket #EL3SNBRK1GRU is compatible with: Ford - '06 Ford Crown Victoria, Explorer & F-150; Chevrolet - '06 Impala '05-'07 Tahoe & '06 Silverado Dodge - '06 Charger, Magnum, Durango & Ram 1500; and Jeep '06 Liberty.

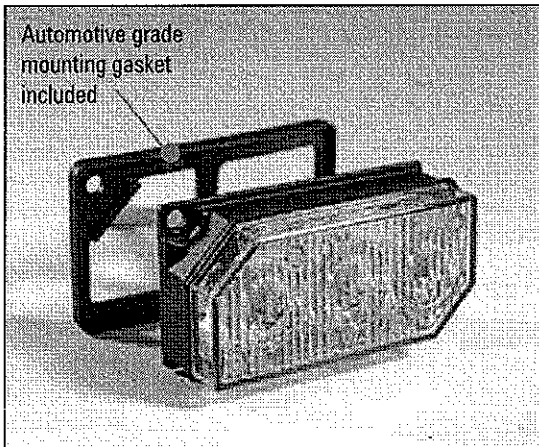
Surface Mount - LED3 Mini Light

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LED3 Mini Light (Gen3 LED)

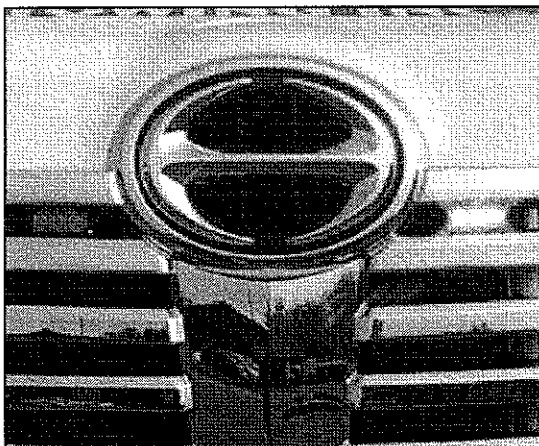


Two Dual Horizontal Brackets shown on a Dodge Charger Police vehicle add great rear visibility.



Automotive grade mounting gasket included

Light includes rubber mounting gasket, mounting screws & 18" of 3-wire cable for installation.



Light is easily surface mounted or used in many applications with versatile bracket offerings. LED3 Mini Lights shown mounted in the grille of a Hino tow truck using 90° Brackets.

GOOD BETTER BEST

PRODUCT RATING

Features

- Our smallest LED Warning Light is a versatile surface mount with powerful output in 5 safety colors.
- Can be surface mounted directly to the body of the vehicle while specific brackets are available for easier push bumper, license plate, trunk, motorcycle boxes & engine fairings.
- Features Light Sync Technology to synchronize up to control flash patterns for up to four lights to flash simultaneously or in an alternating pattern.
- Designed with **Light Sync Technology** that allows you to synchronize up to four lights to flash simultaneously or alternating - all products that feature Light Sync Technology can be wired to flash together.
- Includes automotive grade Rubber Mounting Gasket, Mounting Screws & 18" of 3-wire shielded cable.
- Housing made from a black powder coat aluminum.
- Crystal clear Lexan polycarbonate lens has a scratch resistant finish with a UV inhibitor to prevent scratches & yellowing of the lens.

TECHNICAL SPECIFICATIONS	
Flash Patterns:	33 flash patterns
Input Voltage Range:	10 - 16 Vdc or 10 - 30 Vdc
Current Consumption:	0.5 amps
# of LEDs:	3 - Generation 3 LEDs
Light Sync Technology:	Yes
Operating Temperature:	-40° to +65° C
Dimensions:	length x height x depth
	2.5" l x 1.375" h x 1.25" d



LED3 Mini Light Color Options:

- A=Amber R=Red
- B=Blue W=White
- G=Green

Replace "(x)" in Part Number with desired color code.

PREDATOR™

by SoundOff Signal



**Brackets & Grommets
See pg. 50**

Shown actual size.

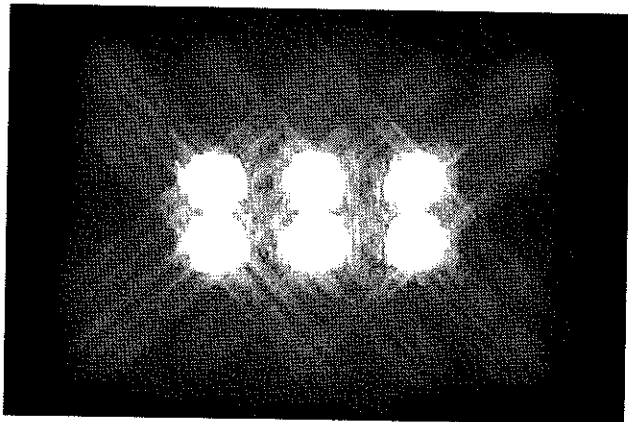
Single Surface Mount Light

Black Housing: #EPRDSSMDB(x)

White Housing: #EPRDSSMDB(x)W

Chrome Housing: #EPRDSSMDB(x)C

Item # 10



Our Predator™ Single Surface Mount Lights

have recently been upgraded to offer Light Synch Technology. Now you can synchronize up to 4 lights to flash in an alternating or simultaneous flash pattern. Light synching allows you to strategically power up your warning lights to increase your visibility to other motorists. New design also features a narrower lens design, increased off angle visibility & enhanced weatherproofing.

PREDATOR™

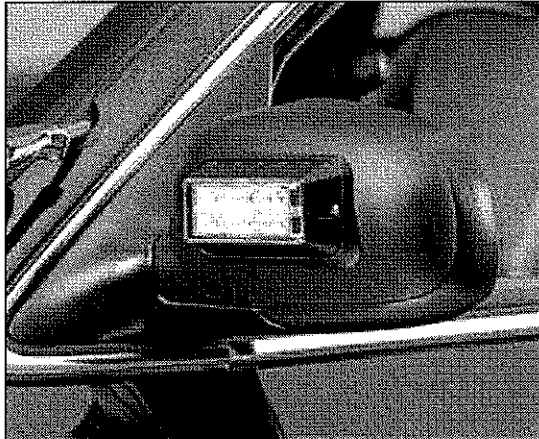
by SoundOff Signal



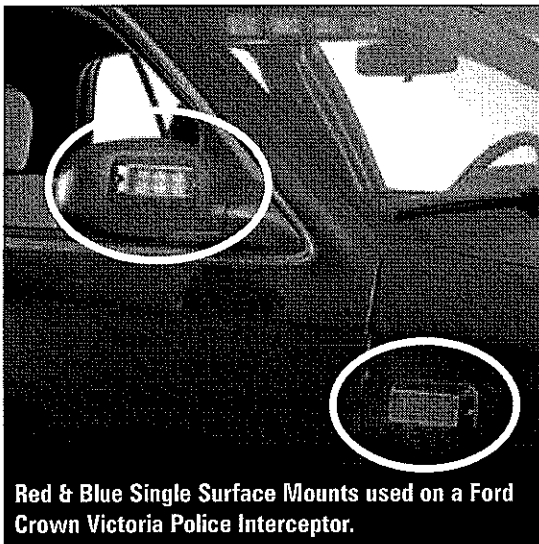
Surface Mount - Predator™ Single LED

1-800-338-7337 / www.soundoffsignal.com

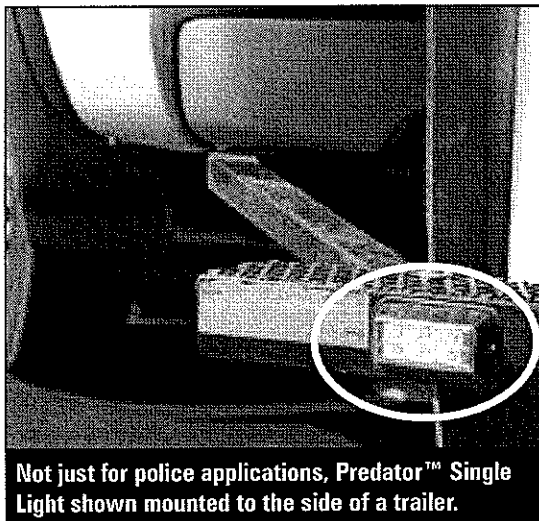
Predator™ Singles (Gen3 LED)



Single Mirror Mount Grommets available, see pg. 50. Kits also available see pg. 49 for details.



Red & Blue Single Surface Mounts used on a Ford Crown Victoria Police Interceptor.



Not just for police applications, Predator™ Single Light shown mounted to the side of a trailer.

GOOD BETTER BEST

PRODUCT RATING

Features

- Heavy duty, surface mount design can be used on all types of vehicles to enhance visibility with LED technology that is easier & more cost effective fleet maintenance, safety & durability
- Can be surface mounted directly to the body of the vehicle while specific brackets are available for push bumper, mirror mounts & motorcycle crash bar mounts for greater mounting flexibility.
- Features Light Sync Technology to synchronize up to control flash patterns for up to four lights to flash simultaneously or in an alternating pattern.
- Crystal clear Lexan polycarbonate lens has a scratch resistant finish with a UV inhibitor to prevent scratches & yellowing of the lens.
- Three housing colors in Black, White or mirrored Chrome available (call for white housing availability & minimums).
- Includes Rubber Mounting Gasket, Mounting Screws & 18" of 3-wire Shielded Cable for installation.

TECHNICAL SPECIFICATIONS

Flash Patterns:	33 flash patterns
Input Voltage Range:	10 - 30 Vdc
Current Consumption:	1.1 amps
# of LEDs:	6 Generation 3 LEDs
Light Sync Technology:	Yes
Operating Temperature:	-40° to +65° C
Dimensions:	length x height x depth
Single	4.5" l x 2.36" h x 1.25" d



Single Surface Mount Color Options:

- A=Amber R=Red
- B=Blue W=White
- G=Green

Replace "(x)" in Part Number with desired color code.

Intertek ETL SEMKO

October 20, 2006

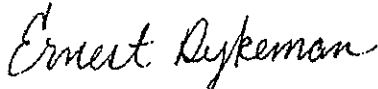
Mr. Steve Christian
Sound Off Inc
3900 Central Parkway
Hudsonville, MI 49426

Dear Mr Christian:

We appreciate the opportunity to be of service to you. Please find enclosed five bound copies of Intertek Report No 3104783CRT-001 covering the tests performed on your sample.

If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact me.

Sincerely,



Ernest Dykeman
Senior Project Engineer
Photometric Testing

Enclosures
ED/cme



Intertek Testing Services NA, Inc.

3933 US Route 11, Corland, NY 13045

Telephone: 607-753-6711 Fax: 607-756-9891 Web: www.intertek-etlsemko.com



SINCE 1896

REPORT

Intertek ETL SEMKO

3933 US ROUTE 11 CORTLAND, NEW YORK 13045



Electrical 1249-01
Mechanical 1249-02

Order No. 3104783

Date: October 20, 2006

REPORT NO. 3104783CRT-001

TEST OF
ETL 5000 LED LIGHT BAR

RENDERED TO

SOUND OFF
3900 CENTRAL PARKWAY
HUDSONVILLE, MI 49426-1618

INTRODUCTION

This report contains the results of examination and test of the above device to demonstrate compliance with the applicable test requirements of the SAE Standards as given in the SAE Handbook and California Administrative Code, Title 13, Article 22, Warning Lamps, effective as of the date of this report and as requested by the client.

The following is a summary of the results of tests of the device performed in accordance with the following SAE and CAC Standards.

Summary

Test	SAE Standards	Results	CAC Standards	Results
Photometric				
Directional Flashing Optical Warning Device	J595 JAN2005	Complies	S817(a)	Complies
Optical Warning Device	J845 MAY1997	Complies	S817(b)	Complies
Warpage	J575 OCT2004	Complies	S667(a)	Complies
Color				
Red, Yellow, Blue	J578 JUL2002	Complies	S816	Complies
Corrosion	J575 OCT2004	Complies	S662	Complies
Vibration	J575 OCT2004	Complies	S666	Complies
Moisture	J575 OCT2004	Complies	S665	Complies
Dust	J575 OCT2004	Complies	S663	Complies

An independent organization testing for safety, performance, and certification.

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AUTHORIZATION

The testing performed was authorized by signed quote number 500005649.

MATERIAL SUBMITTED

The client submitted three light bars. The samples were received by Intertek on September 19, 2006 in undamaged condition, and tested as received. The sample designations are S6059 through S6061.

TEST ASSIGNMENT NUMBERS

Photometrics and Color: S6059 through S6061
Mechanicals: S6059 through S6061

DATES OF TESTS

October 16, 2006 through October 20, 2006

DESCRIPTION OF DEVICE

The light bar consists of LED modules with either clear lens or colored lenses of the same color as the LEDs. The light bars have corner modules and inboard modules. The corner modules have 12 LEDs and the inboard modules have 6 LEDs. The modules and associated electronics are housed in a housing with metal tops and bottoms. These light bars have take down and alley lights. The pertinent markings are listed below. No lens plastic material information or light source information was supplied.

Compliance and Materials Marking - None

Mounting

The devices were submitted on test stands to simulate the mounting conditions on the vehicle.

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Calibration Due Date
Salt Fog Chamber	SCCH22	H168	02/17/07
Moisture Chamber	ETL	H113	10/28/06
Dust Chamber	ETL	H114	10/28/06
60' Goniometer	ETL	N060	07/13/07
DMM-Fluke	87	E259	01/27/07
Photo Research Spectra Scan	PR 705	O052	09/27/07
Thermotron Chamber	SE 1000	H204	03/14/07
Tektronix Oscilloscope	TDS410A	E289	05/30/07
International Light Radiometer 60'	IL1700	L061	Before Use
Fisher Stopwatch	Fisher	Q021	04/11/07
Fisher Stopwatch	Fisher	N854	09/29/07
Vibration Controller	UDC	V254	09/26/07
Signal Conditioner	CVA-4	V252	10/21/06
Accelerometer	10B10T	V255	07/07/07
Torque Wrench	DM70NM	N580	05/15/07

Intertek ETL SEMKO



Electrical 1249-01
Mechanical 1249-02

TESTS AND TEST METHODS

Tests -The tests performed and detailed in this report are listed on page 1 under "Summary".

Test Methods -The test methods used for photometric, color and mechanical test of the submitted device are in accordance with applicable SAE and CAC Standards. The salient points are briefly described in the notes below. Appropriate notations as to specific test methods employed are shown on respective data pages provided under Results of Tests.

STANDARD NOTES

NOTE 1 - Flash Energy Measurements (SAE) - 360 Warning Lamps

Flash energy measurements were made at a distance of 60 feet. The lamp was mounted so that the horizontal plane through the photometer axis passed through the center of the light source and the vertical axis through the center of the light source was perpendicular to this horizontal plane. The rotating element was turned on its vertical axis within its defined arc of coverage until the photometer indicated minimum candlepower. This was taken as the H-V point. The lamp was allowed to operate for at least 5 minutes and the flash energy was then measured. The flash energy is reported as the average of at least ten consecutive flashes. A one-time adjustment in lamp orientation from design position may be made as long as the adjustment does not exceed 1 degree in any direction.

Candlepower Measurements (CAC) - 360 Warning Lamps

Candlepower measurements were made at a distance of 60 feet. The lamp was mounted so that the horizontal plane through the photometer axis passed through the center of the light source and the vertical axis through the center of the light source was perpendicular to this horizontal plane. The lamp assembly was turned about its vertical axis to the location where the maximum candela reading from the optical unit was reduced the most by any variations in density or shape of the transparent cover or by obstructions in the lamp assembly. This was taken as the H-V point. A re-aim tolerance of ± 0.5 deg. vertical and ± 1.0 deg. horizontal was allowed at each test point.

NOTE 2 - Candlepower Measurements (CAC) - Emergency Warning Light Bars

Candlepower measurements were made at a distance of 60 feet. The photometric measurements were taken about the axis straight to the front, sides and rear of the vehicle to which the lamp is designed to provide a warning signal. A re-aim tolerance of ± 0.5 deg. vertical and ± 1.0 deg. horizontal was allowed at each test point. At the client's request, additional photometric measurements were taken at the specified test points of the SAE Standard for 360 Warning Lamps.

NOTE 3 - Candlepower Measurements (SAE) - Flashing Warning Lamps

Candlepower measurements for the Flashing Warning Lamp were made at a distance of 60 feet. The lamp was mounted so that the horizontal and vertical plane through the photometer axis also passes through the center of the test bulb filament. An adjustment in lamp orientation from the design position may be made, provided such adjustment does not exceed 3 deg. in any direction. During the test, the filament of the bulb burned continuously.

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TESTS AND TEST METHODS (cont'd)

STANDARD NOTES (cont'd)

NOTE 3 (cont'd) - Candlepower Measurements (CAC) - Flashing Warning Lamps

Candlepower measurements for the Flashing Warning Lamp were made at a distance of 60 feet. The lamp was mounted so that the maximum intensity was on the H-V axis. A re-aim tolerance of ± 0.5 deg vertical and ± 1.0 deg horizontal was allowed at each test point.

NOTE 4 - High Temperature Flash Rate Test (SAE and CAC)

The device was subjected to an ambient temperature of 50 ± 3 C for a period of six hours. The device was off during the first hour and lighted and operated for five hours at rated voltage (12.8 volts specified by the client). The flash rate was measured before the test, not less than three minutes nor more than four minutes after the beginning of the second hour of the test and not less than three minutes nor more than four minutes after the end of the test.

NOTE 5 - Low Temperature Flash Rate Test (SAE and CAC)

The device was subjected to an ambient temperature of -30 ± 3 C for six hours. The device was off during the first five hours and lighted and operated at rated voltage (12.8 volts specified by the client) during the last hour of the test. The flash rate was measured before the test, not less than three minutes nor more than four minutes after the beginning of the last hour of operation and not less than three minutes nor more than four minutes after the end of the test.

NOTE 6 - Durability Test (SAE and CAC)

The device was operated continuously for 200 hours at an ambient temperature of 25 ± 3 C in cycles consisting of 50 minutes on and 10 minutes off at rated voltage (12.8 volts specified by the client). The flash rate was measured before the test, after 100 hours and three minutes after the last "off" period at the end of the test.

NOTE 7 - In accordance with the requirements of CAC, the High Temperature Flash Rate Test, Low Temperature Flash Rate Test and the Durability Test were performed on the same sample in the same sequence, respectively.

NOTE 8 - Chromaticity Test (SAE and CAC)

The color measurements were made using a spectrophotometer. The light was measured from 380 – 780 nm in 5 nm increments and the chromaticity coordinates determined.

NOTE 9 - Color Test (SAE and CAC)

The test method used for examination of the device for compliance of the emitted color was the "Visual Method".

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RESULTS OF TESTS

Lens Warpage

The red, yellow and blue light bars were subjected to the lens warpage test in a 120 F ambient for one hour at design volts in the manner in which it is operated on the vehicle

Results

The red, yellow and blue light bars showed no evidence of warpage of any plastic part.

Photometric

The submitted devices comply with the SAE and CAC Standards listed under "Summary" for red, yellow and blue.

Test data obtained from the photometric testing of the submitted device is presented on subsequent pages.

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RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) - Front, Red Lens

Device Color: Red Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power		Peak Luminous Intensity	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	7485	480	242	20
10U-V	10458	1200	338	50
10U-5R	7316	480	237	20
5U-20L	6831	480	221	20
5U-10L	11870	1200	622	50
5U-5L	19243	2400	622	100
5U-V	31735	3600	1026	150
5U-5R	18757	2400	607	100
5U-10R	11794	1200	381	50
5U-20R	6580	480	213	20
H-20L	18491	720	598	30
H-10L	29926	1800	968	75
H-5L	47764	4800	1545	200
H-V	72836	7200	2355	300
H-5R	50994	4800	1649	200
H-10R	29216	1800	945	75
H-20R	18963	720	613	30
5D-20L	9703	480	314	20
5D-10L	13942	1200	451	50
5D-5L	20623	2400	667	100
5D-V	32301	3600	1045	150
5D-5R	21866	2400	707	100
5D-10R	15291	1200	494	50
5D-20R	10609	480	343	20
10D-5L	7339	480	237	20
10D-V	11720	1200	379	50
10D-5R	8197	480	265	20

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

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Intertek ETL SEMKO



Electrical 1249-01
Mechanical 1249-02

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Back, Red Lens

Device Color: Red Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	6726	480	218	20
10U-V	8681	1200	281	50
10U-5R	6345	480	205	20
5U-20L	7019	480	227	20
5U-10L	11911	1200	514	50
5U-5L	15881	2400	514	100
5U-V	25268	3600	817	150
5U-5R	15769	2400	510	100
5U-10R	9657	1200	312	50
5U-20R	6093	480	197	20
H-20L	16058	720	519	30
H-10L	24813	1800	802	75
H-5L	40284	4800	1303	200
H-V	57171	7200	1849	300
H-5R	38287	4800	1238	200
H-10R	22004	1800	712	75
H-20R	15506	720	501	30
5D-20L	9315	480	301	20
5D-10L	13783	1200	446	50
5D-5L	21040	2400	680	100
5D-V	36401	3600	1177	150
5D-5R	24213	2400	783	100
5D-10R	14314	1200	463	50
5D-20R	9756	480	316	20
10D-5L	8164	480	264	20
10D-V	12517	1200	405	50
10D-5R	8838	480	286	20

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

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Intertek ETL SEMKO



RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Front, Clear Lens

Device Color: Red Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	8257	480	267	20
10U-V	10950	1200	354	50
10U-5R	8435	480	273	20
5U-20L	8162	480	264	20
5U-10L	8089	1200	488	50
5U-5L	15089	2400	488	100
5U-V	27947	3600	904	150
5U-5R	20509	2400	663	100
5U-10R	13814	1200	447	50
5U-20R	7730	480	250	20
H-20L	16899	720	547	30
H-10L	28301	1800	915	75
H-5L	41860	4800	1354	200
H-V	63314	7200	2048	300
H-5R	43323	4800	1401	200
H-10R	26215	1800	848	75
H-20R	17304	720	560	30
5D-20L	9841	480	318	20
5D-10L	16174	1200	523	50
5D-5L	20399	2400	660	100
5D-V	34265	3600	1108	150
5D-5R	23195	2400	750	100
5D-10R	17564	1200	568	50
5D-20R	10502	480	340	20
10D-5L	8503	480	275	20
10D-V	10680	1200	345	50
10D-5R	9162	480	296	20

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Back, Clear Lens

Device Color: Red Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	9596	480	310	20
10U-V	11704	1200	378	50
10U-5R	8136	480	263	20
5U-20L	9421	480	305	20
5U-10L	17445	1200	805	50
5U-5L	24901	2400	805	100
5U-V	34481	3600	1115	150
5U-5R	20706	2400	670	100
5U-10R	13714	1200	444	50
5U-20R	8106	480	262	20
H-20L	18537	720	599	30
H-10L	31446	1800	1017	75
H-5L	46889	4800	1516	200
H-V	64380	7200	2082	300
H-5R	43910	4800	1420	200
H-10R	28959	1800	937	75
H-20R	18641	720	603	30
5D-20L	9297	480	301	20
5D-10L	13924	1200	450	50
5D-5L	21586	2400	698	100
5D-V	32025	3600	1036	150
5D-5R	22765	2400	736	100
5D-10R	14395	1200	466	50
5D-20R	9522	480	308	20
10D-5L	8051	480	260	20
10D-V	11441	1200	370	50
10D-5R	7827	480	253	20

Device operated at designated test voltage Light source flashing during test.

Test Voltage: 12.8

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Electrical 1249-01
Mechanical 1249-02

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Inboard, Yellow Lens

Device Color: Yellow Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	4226	960	137	40
10U-V	6330	2400	205	100
10U-5R	5414	960	175	40
5U-20L	3792	960	123	40
5U-10L	6710	2400	217	100
5U-5L	9836	4800	318	200
5U-V	17730	7200	573	300
5U-5R	12772	4800	413	200
5U-10R	7392	2400	239	100
5U-20R	3887	960	126	40
H-20L	10088	1440	326	60
H-10L	16606	3600	537	150
H-5L	25647	9600	829	400
H-V	41064	14400	1328	600
H-5R	33373	9600	1079	400
H-10R	19576	3600	633	150
H-20R	12054	1440	390	60
5D-20L	4849	960	157	40
5D-10L	7055	2400	228	100
5D-5L	9901	4800	320	200
5D-V	17480	7200	565	300
5D-5R	13793	4800	446	200
5D-10R	8714	2400	282	100
5D-20R	5116	960	165	40
10D-5L	3781	960	122	40
10D-V	6162	2400	199	100
10D-5R	5229	960	169	40

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

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Intertek ETL SEMKO



ACCREDITED
Electrical 1249-01
Mechanical 1249-02

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Outboard, Yellow Lens

Device Color: Yellow Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	3618	960	117	40
10U-V	5672	2400	183	100
10U-5R	5769	960	186	40
5U-20L	2645	960	86	40
5U-10L	4808	2400	155	100
5U-5L	7751	4800	251	200
5U-V	15664	7200	506	300
5U-5R	13145	4800	425	200
5U-10R	8107	2400	262	100
5U-20R	4920	960	159	40
H-20L	6077	1440	196	60
H-10L	17147	3600	554	150
H-5L	26222	9600	848	400
H-V	33039	14400	1068	600
H-5R	30740	9600	994	400
H-10R	18828	3600	609	150
H-20R	9070	1440	293	60
5D-20L	2556	960	83	40
5D-10L	4119	2400	133	100
5D-5L	6294	4800	203	200
5D-V	12542	7200	405	300
5D-5R	11550	4800	373	200
5D-10R	6899	2400	223	100
5D-20R	4589	960	148	40
10D-5L	2401	960	78	40
10D-V	4170	2400	135	100
10D-5R	4016	960	130	40

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Inboard, Clear Lens

Device Color: Yellow Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	5588	960	181	40
10U-V	8316	2400	269	100
10U-5R	5517	960	178	40
5U-20L	5226	960	169	40
5U-10L	81618	2400	279	100
5U-5L	12600	4800	407	200
5U-V	20960	7200	678	300
5U-5R	12281	4800	397	200
5U-10R	8681	2400	281	100
5U-20R	4816	960	156	40
H-20L	12768	1440	413	60
H-10L	18746	3600	606	150
H-5L	28716	9600	929	400
H-V	40748	14400	1318	600
H-5R	29551	9600	956	400
H-10R	18364	3600	594	150
H-20R	11911	1440	385	60
5D-20L	5253	960	170	40
5D-10L	7526	2400	243	100
5D-5L	11746	4800	380	200
5D-V	16982	7200	549	300
5D-5R	11637	4800	376	200
5D-10R	7611	2400	246	100
5D-20R	4995	960	162	40
10D-5L	3849	960	124	40
10D-V	5881	2400	190	100
10D-5R	4677	960	151	40

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

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Mechanical 1249-02

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Outboard, Clear Lens

Device Color: Yellow Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	5706	960	185	40
10U-V	7158	2400	232	100
10U-5R	4325	960	140	40
5U-20L	5289	960	171	40
5U-10L	9477	2400	460	100
5U-5L	14226	4800	460	200
5U-V	4034	7200	1101	300
5U-5R	10498	4800	339	200
5U-10R	7146	2400	231	100
5U-20R	4262	960	138	40
H-20L	11737	1440	380	60
H-10L	17815	3600	576	150
H-5L	28179	9600	911	400
H-V	38667	14400	1250	600
H-5R	24299	9600	786	400
H-10R	16261	3600	526	150
H-20R	10656	1440	345	60
5D-20L	4241	960	137	40
5D-10L	6340	2400	205	100
5D-5L	10546	4800	341	200
5D-V	15539	7200	503	300
5D-5R	9452	4800	306	200
5D-10R	8789	2400	284	100
5D-20R	3993	960	129	40
10D-5L	3624	960	117	40
10D-V	4734	2400	153	100
10D-5R	3300	960	107	40

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

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Electrical 1249-01
Mechanical 1249-02

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Inboard, Blue Lens

Device Color: Blue Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	1475	480	48	20
10U-V	2046	1200	66	50
10U-5R	1487	480	48	20
5U-20L	1470	480	48	20
5U-10L	3853	1200	124	50
5U-5L	3843	2400	124	100
5U-V	6107	3600	198	150
5U-5R	3694	2400	119	100
5U-10R	2510	1200	81	50
5U-20R	1473	480	48	20
H-20L	4359	720	141	30
H-10L	6789	1800	220	75
H-5L	11511	4800	372	200
H-V	16258	7200	526	300
H-5R	11204	4800	362	200
H-10R	6953	1800	225	75
H-20R	4413	720	143	30
5D-20L	3567	480	115	20
5D-10L	4967	1200	157	50
5D-5L	7329	2400	237	100
5D-V	11405	3600	369	150
5D-5R	8099	2400	262	100
5D-10R	5317	1200	172	50
5D-20R	3348	480	108	20
10D-5L	2414	480	78	20
10D-V	4122	1200	133	50
10D-5R	2780	480	90	20

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
 (Light Source: LEDs) – Outboard, Blue Lens

Device Color: Blue Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power		Peak Luminous Intensity	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	1887	480	61	20
10U-V	2395	1200	77	50
10U-5R	1777	480	57	20
5U-20L	3145	480	102	20
5U-10L	3127	1200	170	50
5U-5L	5264	2400	170	100
5U-V	8678	3600	281	150
5U-5R	5617	2400	182	100
5U-10R	3520	1200	114	50
5U-20R	1899	480	61	20
H-20L	4304	720	139	30
H-10L	6929	1800	224	75
H-5L	11722	4800	379	200
H-V	18372	7200	594	300
H-5R	14112	4800	456	200
H-10R	8059	1800	261	75
H-20R	5199	720	168	30
5D-20L	2547	480	82	20
5D-10L	3561	1200	115	50
5D-5L	5284	2400	171	100
5D-V	8715	3600	282	150
5D-5R	6745	2400	218	100
5D-10R	4321	1200	14	50
5D-20R	2715	480	88	20
10D-5L	1940	480	63	20
10D-V	3274	1200	106	50
10D-5R	2190	480	71	20

Device operated at designated test voltage. Light source flashing during test

Test Voltage: 12.8

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Electrical 1249-01
 Mechanical 1249-02

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – SAE J595 JAN2005
(Light Source: LEDs) – Inboard, Clear Lens

Device Color: Blue Class 1				
Directional Flashing Optical Warning Devices				
Test Points degrees	Optical Power (candela · seconds/minute)		Peak Luminous Intensity (candelas)	
	Measured	Specified Minimum	Measured	Specified Minimum
10U-5L	1611	480	52	20
10U-V	2331	1200	75	50
10U-5R	1801	480	58	20
5U-20L	1790	480	58	20
5U-10L	3034	1200	146	50
5U-5L	4516	2400	146	100
5U-V	7184	3600	232	150
5U-5R	3899	2400	126	100
5U-10R	2676	1200	87	50
5U-20R	1518	480	49	20
H-20L	5211	720	169	30
H-10L	8529	1800	276	75
H-5L	13617	4800	440	200
H-V	18624	7200	602	300
H-5R	11735	4800	379	200
H-10R	7264	1800	235	75
H-20R	4501	720	146	30
5D-20L	4201	480	136	20
5D-10L	5854	1200	189	50
5D-5L	8909	2400	288	100
5D-V	14080	3600	455	150
5D-5R	9353	2400	302	100
5D-10R	5861	1200	190	50
5D-20R	3185	480	103	20
10D-5L	4792	480	155	20
10D-V	3007	1200	97	50
10D-5R	2894	480	94	20

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8



RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) -- SAE J595 JAN2005
(Light Source: LEDs) -- Outboard Clear Lens

Device Color: Blue Class 1					
Directional Flashing Optical Warning Devices					
Test Points degrees	Optical Power		Peak Luminous Intensity		Specified Minimum
	Measured	Specified Minimum	Measured	Specified Minimum	
10U-5L	2882	480	93	20	
10U-V	3528	1200	114	50	
10U-5R	2095	480	68	20	
5U-20L	2799	480	91	20	
5U-10L	5233	1200	253	50	
5U-5L	7821	2400	253	100	
5U-V	9685	3600	313	150	
5U-5R	5084	2400	164	100	
5U-10R	3527	1200	114	50	
5U-20R	2178	480	70	20	
H-20L	5879	720	190	30	
H-10L	9453	1800	306	75	
H-5L	15846	4800	512	200	
H-V	19111	7200	618	300	
H-5R	11877	4800	384	200	
H-10R	7429	1800	240	75	
H-20R	5124	720	166	30	
5D-20L	2687	480	87	20	
5D-10L	3993	1200	129	50	
5D-5L	6677	2400	216	100	
5D-V	8890	3600	287	150	
5D-5R	5363	2400	173	100	
5D-10R	3801	1200	123	50	
5D-20R	2627	480	85	20	
10D-5L	2434	480	79	20	
10D-V	3143	1200	102	50	
10D-5R	1879	480	61	20	

Device operated at designated test voltage. Light source flashing during test.

Test Voltage: 12.8

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RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) -- CAC Title 13, Section 817, Table 1
(Light Source: LEDs) -- Front, Red Lens

Test Points degrees	Device Color: Red Class B Stationary Warning Lamps Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	242	20
10U-V	338	50
10U-5R	237	20
5U-20L	221	20
5U-10L	622	50
5U-5L	622	100
5U-V	1026	150
5U-5R	607	100
5U-10R	381	50
5U-20R	213	20
H-20L	598	30
H-10L	968	75
H-5L	1545	200
H-V	2355	300
H-5R	1649	200
H-10R	945	75
H-20R	613	30
5D-20L	314	20
5D-10L	451	50
5D-5L	667	100
5D-V	1045	150
5D-5R	707	100
5D-10R	494	50
5D-20R	343	20
10D-5L	237	20
10D-V	379	50
10D-5R	265	20

Device operated at design voltage. Light source flashing during test

Volts: 12.8

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RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Back, Red Lens

Test Points degrees	Device Color: Red Class B	
	Stationary Warning Lamps	
	Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	218	20
10U-V	281	50
10U-5R	205	20
5U-20L	227	20
5U-10L	514	50
5U-5L	514	100
5U-V	817	150
5U-5R	510	100
5U-10R	312	50
5U-20R	197	20
H-20L	519	30
H-10L	802	75
H-5L	1303	200
H-V	1849	300
H-5R	1238	200
H-10R	712	75
H-20R	501	30
5D-20L	301	20
5D-10L	446	50
5D-5L	680	100
5D-V	1177	150
5D-5R	783	100
5D-10R	463	50
5D-20R	316	20
10D-5L	264	20
10D-V	405	50
10D-5R	286	20

Device operated at design voltage. Light source flashing during test

Volts: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Front, Clear Lens

Test Points degrees	Device Color: Red Class B Stationary Warning Lamps Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	267	20
10U-V	354	50
10U-5R	273	20
5U-20L	264	20
5U-10L	488	50
5U-5L	488	100
5U-V	904	150
5U-5R	663	100
5U-10R	447	50
5U-20R	250	20
H-20L	547	30
H-10L	915	75
H-5L	1354	200
H-V	2048	300
H-5R	1401	200
H-10R	848	75
H-20R	560	30
5D-20L	318	20
5D-10L	523	50
5D-5L	660	100
5D-V	1108	150
5D-5R	750	100
5D-10R	568	50
5D-20R	340	20
10D-5L	275	20
10D-V	345	50
10D-5R	296	20

Device operated at design voltage Light source flashing during test.

Volts: 12.8

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RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Back, Clear Lens

Test Points degrees	Device Color: Red Class B	
	Stationary Warning Lamps	
	Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	310	20
10U-V	378	50
10U-5R	263	20
5U-20L	305	20
5U-10L	805	50
5U-5L	805	100
5U-V	1115	150
5U-5R	670	100
5U-10R	444	50
5U-20R	262	20
H-20L	599	30
H-10L	1017	75
H-5L	1516	200
H-V	2082	300
H-5R	1420	200
H-10R	937	75
H-20R	603	30
5D-20L	301	20
5D-10L	450	50
5D-5L	698	100
5D-V	1036	150
5D-5R	736	100
5D-10R	466	50
5D-20R	308	20
10D-5L	260	20
10D-V	370	50
10D-5R	253	20

Device operated at design voltage. Light source flashing during test.

Volts: 12.8



RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Inboard, Yellow Lens

Test Points degrees	Device Color: Yellow Class B	
	Stationary Warning Lamps	
	Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	137	50
10U-V	205	125
10U-5R	175	50
5U-20L	123	50
5U-10L	217	125
5U-5L	318	250
5U-V	573	375
5U-5R	413	250
5U-10R	239	125
5U-20R	126	50
H-20L	326	75
H-10L	537	190
H-5L	829	500
H-V	1328	750
H-5R	1079	500
H-10R	633	190
H-20R	390	75
5D-20L	157	50
5D-10L	228	125
5D-5L	320	250
5D-V	565	375
5D-5R	446	250
5D-10R	282	125
5D-20R	165	50
10D-5L	122	50
10D-V	199	125
10D-5R	169	50

Device operated at design voltage. Light source flashing during test

Volts: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Outboard, Yellow Lens

Test Points degrees	Device Color: Yellow Class B	
	Stationary Warning Lamps	
	Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	117	50
10U-V	183	125
10U-5R	186	50
5U-20L	86	50
5U-10L	155	125
5U-5L	251	250
5U-V	506	375
5U-5R	425	250
5U-10R	262	125
5U-20R	259	50
H-20L	196	75
H-10L	554	190
H-5L	848	500
H-V	1068	750
H-5R	994	500
H-10R	609	190
H-20R	293	75
5D-20L	83	50
5D-10L	133	125
5D-5L	203	250
5D-V	405	375
5D-5R	373	250
5D-10R	223	125
5D-20R	148	50
10D-5L	78	50
10D-V	135	125
10D-5R	130	50

Device operated at design voltage Light source flashing during test

Volts: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Inboard, Clear Lens

Test Points degrees	Device Color: Yellow Class B Stationary Warning Lamps Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	181	50
10U-V	269	125
10U-5R	178	50
5U-20L	169	50
5U-10L	279	125
5U-5L	407	250
5U-V	678	375
5U-5R	397	250
5U-10R	281	125
5U-20R	156	50
H-20L	413	75
H-10L	606	190
H-5L	929	500
H-V	1318	750
H-5R	956	500
H-10R	594	190
H-20R	385	75
5D-20L	170	50
5D-10L	243	125
5D-5L	380	250
5D-V	549	375
5D-5R	376	250
5D-10R	246	125
5D-20R	162	50
10D-5L	124	50
10D-V	190	125
10D-5R	151	50

Device operated at design voltage Light source flashing during test.

Volts: 12.8



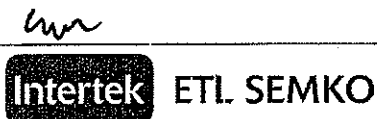
RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Outboard, Clear Lens

Test Points degrees	Device Color: Yellow Class B Stationary Warning Lamps Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	185	50
10U-V	232	125
10U-5R	140	50
5U-20L	171	50
5U-10L	460	125
5U-5L	460	250
5U-V	1101	375
5U-5R	339	250
5U-10R	231	125
5U-20R	138	50
H-20L	380	75
H-10L	576	190
H-5L	911	500
H-V	1250	750
H-5R	786	500
H-10R	526	190
H-20R	345	75
5D-20L	137	50
5D-10L	205	125
5D-5L	341	250
5D-V	503	375
5D-5R	306	250
5D-10R	284	125
5D-20R	129	50
10D-5L	117	50
10D-V	153	125
10D-5R	107	50

Device operated at design voltage Light source flashing during test

Volts: 12.8



RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) -- CAC Title 13, Section 817, Table 1
(Light Source: LEDs) -- Inboard, Blue Lens

Test Points degrees	Device Color: Blue Class B	
	Stationary Warning Lamps	
	Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	48	10
10U-V	66	25
10U-5R	48	10
5U-20L	48	10
5U-10L	124	25
5U-5L	124	50
5U-V	198	75
5U-5R	119	50
5U-10R	81	25
5U-20R	48	10
H-20L	141	15
H-10L	220	38
H-5L	372	100
H-V	526	150
H-5R	362	100
H-10R	225	38
H-20R	143	15
5D-20L	115	10
5D-10L	157	25
5D-5L	237	50
5D-V	369	75
5D-5R	262	50
5D-10R	172	25
5D-20R	108	10
10D-5L	78	10
10D-V	133	25
10D-5R	90	10

Device operated at design voltage. Light source flashing during test

Volts: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Outboard Blue Lens

Test Points degrees	Device Color: Blue Class B	
	Stationary Warning Lamps	
	Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	61	10
10U-V	77	25
10U-5R	57	10
5U-20L	102	10
5U-10L	170	25
5U-5L	170	50
5U-V	281	75
5U-5R	182	50
5U-10R	114	25
5U-20R	61	10
H-20L	139	15
H-10L	224	38
H-5L	379	100
H-V	594	150
H-5R	456	100
H-10R	261	38
H-20R	168	15
5D-20L	82	10
5D-10L	115	25
5D-5L	171	50
5D-V	282	75
5D-5R	218	50
5D-10R	140	25
5D-20R	88	10
10D-5L	63	10
10D-V	106	25
10D-5R	71	10

Device operated at design voltage Light source flashing during test.

Volts: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Inboard, Clear Lens

Test Points degrees	Device Color: Blue Class B	
	Stationary Warning Lamps	
	Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	52	10
10U-V	75	25
10U-5R	58	10
5U-20L	58	10
5U-10L	146	25
5U-5L	146	50
5U-V	232	75
5U-5R	126	50
5U-10R	87	25
5U-20R	49	10
H-20L	169	15
H-10L	276	38
H-5L	440	100
H-V	602	150
H-5R	379	100
H-10R	235	38
H-20R	146	15
5D-20L	136	10
5D-10L	189	25
5D-5L	288	50
5D-V	455	75
5D-5R	302	50
5D-10R	190	25
5D-20R	103	10
10D-5L	155	10
10D-V	97	25
10D-5R	94	10

Device operated at design voltage. Light source flashing during test

Volts: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) – CAC Title 13, Section 817, Table 1
(Light Source: LEDs) – Outboard, Clear Lens

Test Points degrees	Device Color: Blue Class B Stationary Warning Lamps Luminous Intensity (candelas)	
	Measured	Specified Minimum
10U-5L	93	10
10U-V	114	25
10U-5R	68	10
5U-20L	91	10
5U-10L	253	25
5U-5L	253	50
5U-V	313	75
5U-5R	164	50
5U-10R	114	25
5U-20R	70	10
H-20L	190	15
H-10L	306	38
H-5L	512	100
H-V	618	150
H-5R	384	100
H-10R	240	38
H-20R	166	15
5D-20L	87	10
5D-10L	129	25
5D-5L	216	50
5D-V	287	75
5D-5R	173	50
5D-10R	123	25
5D-20R	85	10
10D-5L	79	10
10D-V	102	25
10D-5R	61	10

Device operated at design voltage. Light source flashing during test.

Volts: 12.8

RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) - SAE J845 MAY1997
 (Light Source: LEDs) – Red Lens

Device Color: Red Class 1				
Optical Warning Device				
Flash Energy (candela · seconds)				
Test Points deg.	Device Measured		Specified Minimum SAE	
	Pt. by Pt.	Zone Total	60% of Table	Zone Total
5.00U-V	93		3.0	
2.50U-V	142		13.5	
H-V	216	821	2.7	100
2.50D-V	221		13.5	
5.00D-V	149		3.0	

Device operated at test voltage

Volts: 12.8

Photometric (Test distance: 60 feet) - SAE J845 MAY1997
 (Light Source: LEDs) – Clear Lens

Device Color: Red Class 1				
Optical Warning Device				
Flash Energy (candela · seconds)				
Test Points deg.	Device Measured		Specified Minimum SAE	
	Pt. by Pt.	Zone Total	60% of Table	Zone Total
5.00U-V	101		3.0	
2.50U-V	166		13.5	
H-V	263	960	2.7	100
2.50D-V	266		13.5	
5.00D-V	164		3.0	

Device operated at test voltage.

Volts: 12.8

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RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) - SAE J845 MAY1997
(Light Source: LEDs) – Yellow Lens

Device Color: Yellow Class 1				
Optical Warning Device				
Flash Energy (candela · seconds)				
Test Points deg.	Device Measured		Specified Minimum SAE	
	Pt. by Pt.	Zone Total	60% of Table	Zone Total
5.00U-V	31		6.0	
2.50U-V	44*		27	
H-V	66*	253	54	200
2.50D-V	64		27	
5.00D-V	48		6.0	

Device operated at test voltage

Volts: 12.8

Photometric (Test distance: 60 feet) - SAE J845 MAY1997
(Light Source: LEDs) – Clear Lens

Device Color: Yellow Class 1				
Optical Warning Device				
Flash Energy (candela · seconds)				
Test Points deg.	Device Measured		Specified Minimum SAE	
	Pt. by Pt.	Zone Total	60% of Table	Zone Total
5.00U-V	39		6.0	
2.50U-V	64		27	
H-V	104	347	54	200
2.50D-V	89		27	
5.00D-V	51		6.0	

Device operated at test voltage.

Volts: 12.8

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RESULTS OF TESTS (cont'd)

Photometric (Test distance: 60 feet) - SAE J845 MAY1997
 (Light Source: LEDs) – Blue Lens

Device Color: Blue Class 1				
Optical Warning Device				
Flash Energy (candela · seconds)				
Test Points deg.	Pt. by Pt.	Device Measured		Specified Minimum SAE
		Zone Total	60% of Table	Zone Total
5.00U-V	34		3.0	
2.50U-V	51		13.5	
H-V	69	257	2.7	100
2.50D-V	62		13.5	
5.00D-V	41		3.0	

Device operated at test voltage.

Volts: 12.8

Photometric (Test distance: 60 feet) - SAE J845 MAY1997
 (Light Source: LEDs) – Clear Lens

Device Color: Blue Class 1				
Optical Warning Device				
Flash Energy (candela · seconds)				
Test Points deg.	Pt. by Pt.	Device Measured		Specified Minimum SAE
		Zone Total	60% of Table	Zone Total
5.00U-V	28		3.0	
2.50U-V	44		13.5	
H-V	65	244	2.7	100
2.50D-V	63		13.5	
5.00D-V	44		3.0	

Device operated at test voltage.

Volts: 12.8

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RESULTS OF TESTS (cont'd)Chromaticity Test – See Standard Note 8

Chromaticity measurements for the color of light emitted are listed below for the functions under test.

Lens color	LED Color	Chromaticity Coordinates		
		x	y	z
red	red	0.691	0.305	0.004
clear	red	0.687	0.309	0.004
yellow	yellow	0.586	0.401	0.013
clear	yellow	0.593	0.402	0.005
Blue	blue	0.139	0.049	0.812
clear	blue	0.143	0.045	0.802

The device complies with the requirements of SAE J578 JUL.2002 for red, yellow and blue.

Corrosion Test

Upon examination after test, there was no visual evidence of corrosion.

Vibration Test

Upon completion of the test, there were no mechanical or electrical failures that would affect the proper operation of the device.

Moisture Test

Upon examination after test, there was no visual evidence of water inside the device.

Dust Test

Upon examination after test and after cleaning the outside, there was no visual evidence of the presence of dust inside the device.

In Charge of Tests:

Ernest Dykeman

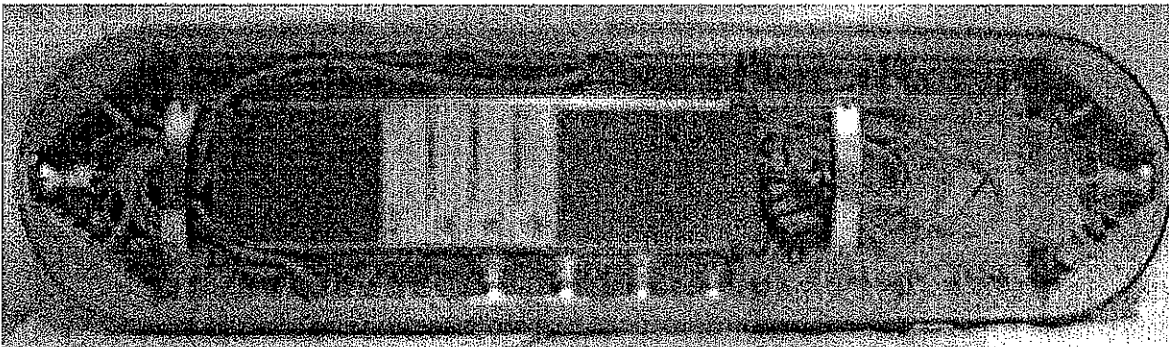
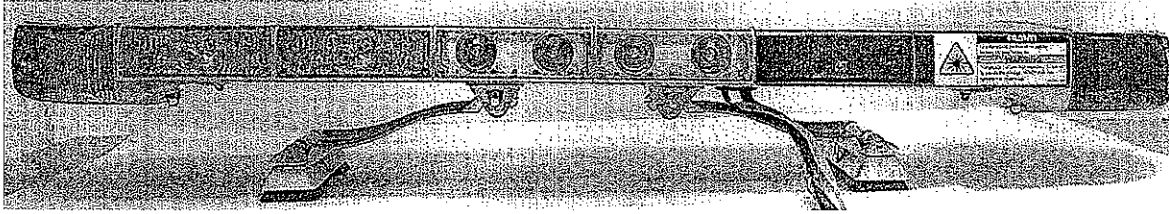
Ernest Dykeman
Senior Project Engineer
Photometric Testing

Report Reviewed by:

Jeremy N. Downis
Jeremy N. Downis, P.E.
Engineering Team Leader
Photometric Testing

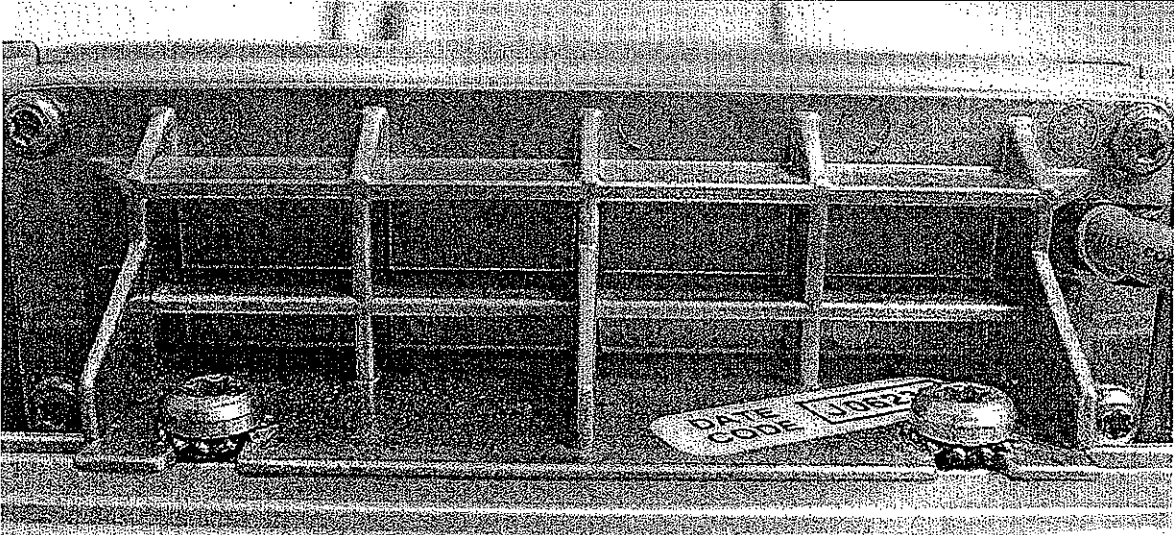
Attachment: Four Picture Pages

"TEST OF ETL 5000 LED LIGHT BAR"
TESTED FOR SOUND OFF INC.



"TEST OF ETL 5000 LED LIGHT BAR"
TESTED FOR SOUND OFF INC

Inboard Modules



"TEST OF ETL 5000 LED LIGHT BAR"
TESTED FOR SOUND OFF INC

Corner Modules

