

Body Worn Cameras with Automatic Activation Assessment QuickLook

BODY WORN CAMERAS WITH AUTOMATIC ACTIVATION

First responders use body cameras to record interactions with other responders and the public while on duty. These cameras may be used by all responder disciplines to ensure transparency, deter aggressive behavior, preserve evidence, monitor personnel, document interactions, support the accuracy of written reports, provide a training tool, and aid in improving standard operating procedures. This equipment falls under the Authorized Equipment List (AEL) reference number 13LE-00-SURV, titled "Law Enforcement Surveillance Equipment."

Assessment Overview

From September 19–22, 2022, the [National Urban Security Technology Laboratory](#) (NUSTL), with the support of DAGER Technology, LLC (DAGER), conducted an assessment of body worn cameras (BWC) with automatic activation capabilities, specifically unholstering a firearm and engaging vehicle emergency lights/sirens. The assessment took place at the New York State Department of Homeland Security and Emergency Services State Preparedness Training Center in Oriskany, New York. The assessment was held to obtain hands-on feedback on BWCs that will help response agencies make operational and procurement decisions. Assessment activities and evaluation criteria were based on recommendations from a focus group of responders. A report on that focus group and additional knowledge products can be found in the System Assessment and Validation for Emergency Responders (SAVER) Document Library at www.dhs.gov/science-and-technology/saver/st-automatic-activation-body-cameras.

Nine responders from California, Colorado, Florida, Georgia, New York, North Carolina, Oklahoma, Pennsylvania and Virginia assessed four BWCs and their associated automatic activation sensors* by using them in simulated law enforcement scenarios. Throughout these scenarios the evaluators assessed 30 criteria distributed across the five SAVER Categories: Capability, Usability, Deployability, Maintainability and Affordability. Fifteen criteria were assessed operationally: mounting options,+ size,+ weight,+ ease of use of controls,+ field tagging, customization of triggers, ability to use while wearing gloves,+ pre-event buffer, overall durability,+ audio quality, image quality, remote triggers,+ image stabilization, motion blur mitigation and privacy controls. Fifteen other criteria – battery life,+ computer-aided dispatch system integration, integration with court system evidence requirements, cellular connectivity, IP rating, operable temperature range, digital evidence management integration, user assignment,+ IT support, in-house maintenance, charging method, training services, warranty, training costs, and vendor storage flexibility – were assessed by reviewing manufacturer-provided specification.



Figure 1. Two evaluators using the Motorola V300 body cameras during an unholstering and room clearing scenario.

* Sensors for automatic activation by unholstering weapon were assessed with the Axon Body 3, Motorola V300 and Utility Body Worn

+ Indicates criteria that applied to both the cameras and the sensors

Assessed Body-Worn Cameras



Axon Enterprises
Body 3



Motorola
V300



Motorola
VB400



Utility Associates
Body Worn

Images Credit: Axon Enterprises (left), Motorola (center) and Utility Associates (right)

Overall Results

Products were evaluated and received separate scores for the cameras and the sensor activation components. Among the cameras, Axon Enterprises' Body 3 scored the highest overall, followed by Utility Associates, and then Motorola's V300 and VB400. The first table below presents the overall scores and category scores for each BWC. The second table presents overall and category scores for the holster automatic activation sensors. Products in both tables are listed from highest to lowest overall score. For sensors triggered by engaging vehicle emergency lights and/or sirens, only demonstration kits could be used at the assessment because test vehicles did not allow for hardwire installation. As such, they were assessed but not scored. Each criterion is scored on a scale from 1 to 5. The category scores are determined by calculation of a weighted average of the evaluation criteria scores. The overall score is a weighted average of the five category scores. An average rating for each criterion is calculated by summing the evaluators' scores and dividing the sum by the number of responses.

Camera Assessment Scores							
Company	Model	Overall Score	Capability	Deployability	Usability	Maintainability	Affordability
Axon Enterprises	Body 3	4.1	4.1	4.2	4.0	4.2	3.8
Utility	Body Worn	3.7	3.7	3.8	3.4	3.8	4.0
Motorola	V300	3.6	3.1	3.9	3.9	4.0	4.0
Motorola	VB400	3.3	3.1	3.8	2.9	3.9	3.6

Holster Sensor Assessment Scores					
Company	Model	Overall Score	Capability	Usability	Deployability
Axon Enterprises	Signal Sidearm	3.8	3.7	4.0	3.9
Motorola	Yardarm Holster Aware	3.7	4.0	3.6	3.6
Utility	Smart Holster Sensor	3.6	3.4	4.2	3.6

Vehicle Sensors

Axon, Motorola and Utility make sensors for hardwiring into a vehicle so that when emergency lights and sirens are engaged, a BWC activates automatically. Evaluators favored this activation method for its seamless integration with policing operations. Qualitative feedback on these sensors will be included in the full report.

Key Takeaways: Camera

Scores for four select criteria under Capability and Usability are displayed in Charts 1 and 2.

These criteria highlight key findings between the devices and where evaluators found more pronounced differences. Products are displayed in order of their overall score.

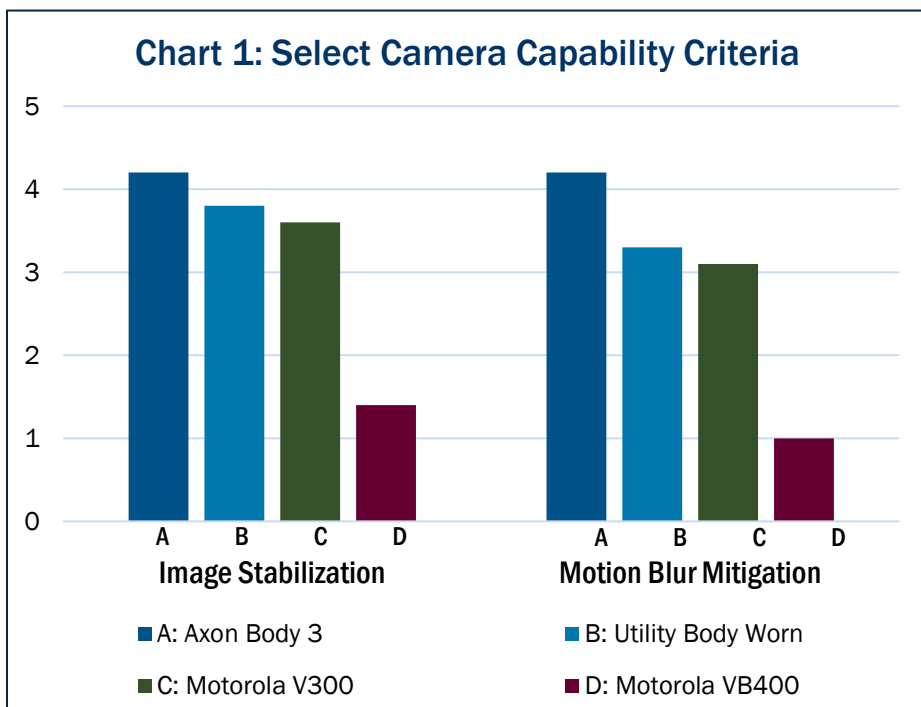


Chart 1: Camera Capability

Each BWC met most or all evaluator expectations for image quality. Evaluators deemed image stabilization and motion blur important aspects; both of these contributed to Capability scores. The Axon Body 3 scored highest, meeting all expectations for image stabilization and motion blur mitigation. Evaluators noted the Body 3 model stayed focused while the wearers moved, resulting in footage that remained crisp and displayed minimal shakiness.

The Motorola VB400 scored the lowest in both criteria. Evaluators found its footage was shakier and blurrier than the other BWC recordings taken during similar movements. Comparative motion blur mitigation is shown in Figure 4 below.



Figure 4. Still images pulled from the Axon Body 3 (left) and Motorola VB400 (right) body cameras during the room clearing scenario.

Chart 2: Select Camera Usability Criteria

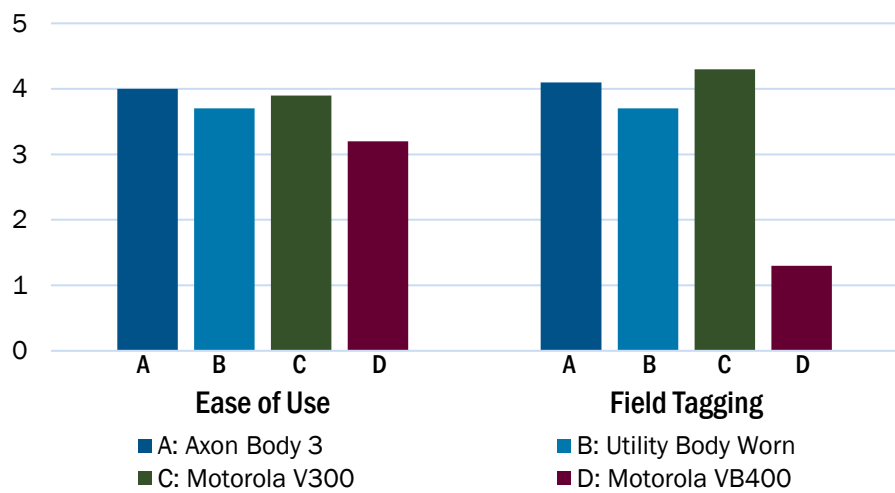


Chart 2: Camera Usability

Evaluators deemed ease of use and field tagging important for operations. Each BWC met most or all of the evaluators' expectations. The Axon Body 3 scored the highest based on the size of the event button and its ease of manual activation and deactivation. The Motorola VB400 scored the lowest. Evaluators noted its buttons were unlabeled and set flush with the BWC, which made them difficult to locate by feel.

The Motorola V300 scored the highest in field tagging due to its options to tag video on the BWC itself or through an app. The Motorola VB400 scored the lowest. Tagging with the VB400 requires users to upload footage to a computer and tag videos using the designated software. One evaluator noted that if multiple incidents were recorded before they could be tagged, that could lead to confusion and impact evidence.

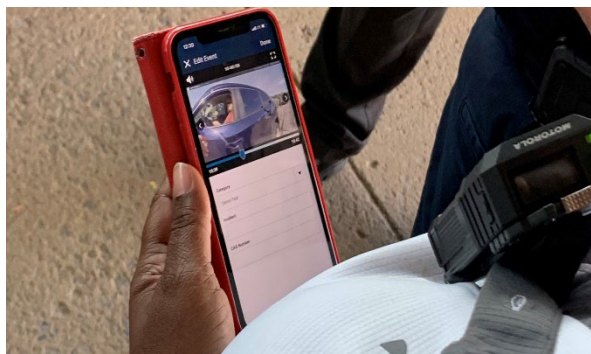


Figure 5. Evaluator using the mobile application associated with the Motorola V300 to tag body camera footage

Key Takeaways: Holster Activation Sensors

Holster sensors were assessed with the Axon Body 3, Motorola V300 and Utility Body Worn cameras. The Signal Sidearm sensor paired with the Axon Body 3 scored the highest, meeting all evaluators' expectations; the other two holster sensors met most expectations. Evaluators expressed concern with the durability based on the options for mounting the sensor to the holster. Sensor scores were based on a variety of criteria including battery life and user assignment.

For More Information

This document provides limited information on the SAVER assessment methodology and a limited comparative analysis of body worn cameras with automatic activation. Additional information on the assessment and the complete comparative results will be shared in a final report to be published within the [SAVER Document Library](#), specifically the "Automatic Activation of Body Cameras" page found at www.dhs.gov/science-and-technology/saver/st-automatic-activation-body-cameras.

More than 1,000 knowledge products can be found within the SAVER Document Library at www.dhs.gov/science-and-technology/saver-documents-library. For more information on the National Urban Security Technology Laboratory please visit our [website](#) or contact us at NUSTL@hq.dhs.gov.

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