Annex A

In-Car Digital Video System (*ICDVS*)

Functional and Technical Specifications

I - Introduction

1. The *in-car digital video system* (*ICDVS*) is used to gather evidence for criminal prosecutions and to meet Canada's security and defence commitments. The *ICDVS* is required for operations in low threat, and tactical areas such as patrolling, special operations and peacekeeping. The *ICDVS* will be required progressively in various RCMP vehicles and deployed across Canada. The RCMP's audio and video policy is mandatory to retain all data for a minimum of two years[1] subsequent to its original *capture*.

2. The purpose of the *ICDVS* is to *capture* audio and video of activities inside and in front of police vehicles to which they are attached. The *ICDVS* footage is to provide evidence of interaction of members with stopped vehicles and occupants as well as with prisoners while occupying the back seat of the police vehicle. *ICDVS* consists of a recording device linked to two cameras and two microphones. *ICDVS* audio/video footage is *export*ed from the unit physically to a *removable solid state storage media* or wirelessly to an *Active Storage* or *Archival Storage* system. The *removable solid state storage media* is handled as the original from which copies in suitable *format(s)* are made as required. If an *Active Storage* or *Archival Storage* system is used, an original and copies in suitable *format(s)* are made as required.

3. The police vehicles are consistently shrinking in size while their drivers are becoming busier with equipment with increased complexity and comprising a multitude of components. To address this situation, the RCMP is working towards establishing a suitable integrated solution for all in-car digital equipment.

4. Next generation of *ICDVS* has to work with RCMP in-car vehicle equipment currently in use and has to be interoperable with current RCMP server and platform standards. The hardware and software required for active and *archival storage* is not within the scope of this standing offer.

II - Functional and Technical Requirements

1. The *ICDVS* functional and technical requirements presented in this document aim at defining the minimum performance criteria for the equipment while taking into consideration the best evidence

[1] Section 4. (1) Privacy Regulations SOR/83-508: Personal information concerning an individual that has been used by a government institution for an administrative purpose shall be retained by the institution (a) for at least two years following the last time the personal information was used for an administrative purpose unless the individual consents to its disposal; and (b) where a request for access to the information has been received, until such time as the individual has had the opportunity to exercise all his rights under the (Privacy) Act.

"Administrative purpose" is defined as: in relation to the use of personal information about an individual, means the use of that information in a decision making process that directly affects that individual (Privacy Regulations SOR/83-508)

criteria set by the courts, the privacy concerns, as well as the health and safety of the vehicle occupants.

2. For the purpose of this specification, the definition of mandatory requirements shall be that all requirements prefaced by the words "**shall**", "**must**", "**is to**" and/or "**are to**" shall be mandatory and must be met in order for the bid to be considered technically compliant.

3. All proposed *ICDVS* **must** be in current production and generally available on the market (no beta test components will be considered).

4. This specification addresses three configurations, basic, enhanced and wire/wireless. The basic configuration includes cameras, recorder, microphones, monitor, controller, all necessary ancillary components, including *solid state removable storage media*, video management software *and diagnostic tools, if any*. The enhanced configuration includes cameras, recorder, microphones, all necessary ancillary components, including *removable solid state storage media*, video management software *and diagnostic tools, if any*, with or without monitor and controller but with an interface with the existing vehicle Mobile Data Terminal (*MDT*) (also called the Mobile Workstation System - *MWS*) to perform the *ICDVS* monitoring and controlling functions. The wire/wireless configuration is a wire/wireless *export* capability added to the equipment of the basic configuration and/or the enhanced configuration.

5. All *ICDVS* hardware iterations, basic, enhanced and wire/wireless configurations **must** be upgradable using the same cameras, recorder, microphones and ancillary equipment and/or software capabilities. The wire/wireless capability **is to** be upgraded/enabled in the basic configuration and in the enhanced configuration.

III - Definitions

In this document, the terms in italic are defined as follow:

Active storage: a location or device (e.g. server) to which *DME* is *copied* from the in-vehicle recorder using any method

Archival storage: a location or device to which the *DME* is moved after a designated amount of time and where it resides for an extended period of time

Audio monitor: device for listening to live and recorded audio

Audit log: a collection of *metadata* intended to track audio/video events and system events, such as boot up, diagnostic failures or status changes

Authentication (1) the (Court) process of affirming that the data fairly and accurately represents what it purports to show; (2,a) a security measure designed to protect a communications system against acceptance of a fraudulent transmission or simulation by establishing the validity of a transmission, message or originator; (2,b) a means of identifying individuals and verifying their eligibility to receive specific categories of information; (2,c) evidence by proper signature or seal that a document is genuine and official; (2,d) in evasion and recovery operations, the process whereby the identity of an evader is confirmed; (2,e) a means of proving the origin of the evidence and that it has not subsequently been altered (or, where alteration has occurred, that such alterations are properly identified); (2,f) the process of determining whether a recording or image is original, continuous, and free from unexplained alterations.

Back-seat camera: the *ICDVS* camera and lens assembly intended to be mounted in the vehicle to capture activities in the back-seat area

Capture: the process of producing or recording the *DME* from a natural event

Codec: a device/program capable of encoding and/or decoding digital data; *codec*s encode a stream or signal for transmission, storage or *encryption*, and decode it for viewing and listening

Conversion: the change of data format used to represent *DME*

Converted *DME*: the *DME* in a different data format than the original *format*

Copy: an accurate reproduction of information

Digital recorder: any device used to *record DME*

DME: Digital Multi Media Evidence; data representing audio *essence*, video *essence*, *metadata* and any other information attached to a digital file; see *converted DME*, *original DME*

Duplicate: an acceptably accurate and complete reproduction of all data objects independent of the physical media

Encryption: the process of coding data so that a specific code or key is required to restore the original data

Essence: sound and/or picture information, not including *metadata*

Export: to *copy* or move information from within a device or system to a physical or logical location outside that device or system. *ICDVS* export is first performed to acquire the *DME* recording on *removable solid state storage media* or wirelessly on *Active Storage* server. A subsequent export is performed to make digital bit-for-bit or converted working *copy*(ies). Other export operations occur when *DME* is copied/moved between the *Active Storage* and the *Archival Storage* server.

Field of view (FOV): the horizontal angular extent of a scene imaged by the video camera; FOV depends on the focal length of the camera lens and the size of the camera's imager chip

Format: the specific structure for the data in a file

Front-facing camera: the *ICDVS* camera and lens assembly intended to be mounted in the front of the vehicle and be forward facing to *capture* activities in front of the vehicle

Hash function: a mathematical formula that generates a unique number based on the data in a file; the hash function is used to verify the data's integrity

In-car digital video security system (*ICDVS*): a system for recording *DME* to document events in and around a law enforcement vehicle

Integrity: (1) the *reliability* and accuracy of *DME* throughout its lifecycle; (2) the degree to which a system or component prevents degradation of, unauthorized access to or modification of the *DME*

Location: the location within the documentation provided by an Offeror where the information supporting the Offeror's compliance to the identified requirement can be verified

Manufacturer's Documentation Review: that the technical requirements identified in the table found at Annex A will be verified through the means of an official document from the *ICDVS* manufacturer and, where the requirements refer to a standard, a test report from an accredited laboratory or licensed professional engineer as applicable; Offerors are requested to identify where in there documentation the information relevant to each specific requirement compliance can be found (See location)

Metadata: data embedded within or associated with a file that describes information about, or related to, the file or its directory; this may include, but is limited to, locations where the content is stored, dates, times, application-specific information and permissions, and system-related events. It is data about data

Native file format: the original form of a file; this usually refers to a file *format* associated with, and unique to, a specific software application program

Operators: in relation to the *ICDVS* in-vehicle equipment, the vehicle drivers or occupants normally activating/deactivating the equipment

Original *DME*: data recorded and retrieved to media in its *native file format* (i.e. first usable form)

Passive mode: an operating condition of the remote *wireless microphone* and transmitter when paired with the rest of the base unit but not transmitting audio data

Pixel: a picture element

Proprietary: a characteristic of a technique, technology or device owned and controlled by a company or other party and thereby only usable or adaptable as allowed by that party

RCMP Lab Testing: that the system's performance/operation in the basic configuration, the enhanced configuration and the wireless configuration identified in the table found at Annex A will be verified in a RCMP lab environment as well as in an actual RCMP police car set up in Ottawa (Ontario). RCMP Lab Testing will be conducted only after an Offeror is found to be compliant once the technical requirements requiring Manufacturer Documentation Review and Witnessing System Operation has been evaluated

Rear-facing camera: *ICDVS* camera and lens assembly intended to be installed at the back of the vehicle and be back-ward facing to *capture* activities at the back of the vehicle

Record: the process of writing *DME* to *recording media*

Recording media: any object to which *DME* is written and can be retrieved

Reliability: the extent to which a process can repeatedly produce the same effective output, with a central tendency and an acceptable dispersion, for consistent input settings; information from such a system is said to be reliable

Removable solid state storage media: any portable data storage device made from silicon microchips designed for removal from a system without disassembly of the system or the storage device; removable solid state storage such as memory cards (USB flash drives or thumb drives) stores data electronically instead of magnetically, as spinning hard drives or magnetic oxide tape do.

Wired microphone: *ICDVS* microphone intended to be installed within the law enforcement vehicle

Verification: the process of confirming the accuracy of any *copy* of the *DME* compared to the *original DME*; this process normally includes the application of a type of *hash function*

Video monitor: device for viewing live and *record*ed video

Wireless microphone: the *ICDVS* microphone, transmitter, battery and accessories (e.g. cords) intended to be worn by an officer

Witnessing System Operation: that the technical requirements identified in the table found at Annex A will be witnessed by an RCMP representative to verify their performance at a location identified by the Offeror

IV - Acronyms

In this document, the acronyms in italic are defined as follow:

DME: Digital Multimedia Evidence

FOV: Field of View

HF: High Frequency

ICDVS: In Car Digital Video System

MDT: Mobile Data Terminal

MWS: Mobile Workstation System

UHF: Ultra High Frequency

UL: Underwriter Laboratories Inc

VHF: Very High frequency

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
1. The *ICDVS* **must** be capable of being assembled into 3 different configurations (basic, enhanced and wire/wireless) and of being upgradable from one configuration to the other without changing the cameras, microphones, recorder and ancillary equipment.	a. The *ICDVS* basic configuration **must** consist of one *front-facing camera*, one *back-seat camera*, one *wireless microphone*, one *wired microphone*, one controller, one *digital recorder*, one *video monitor,* one *audio monitor with all the necessary ancillary components including the video management software and diagnostic tools, if any; and*.	X				
	1) The *video monitor,* the *audio monitor* and the controller may be combined into a single component	X				
	2) The *back-seat camera* and the *wired microphone* can be combined in a single device	X				
	3) The *ICDVS* basic configuration **must** provide audio/video recordings on *removable solid state storage media*	X				
	4) The *ICDVS* basic configuration **must** be capable of operating a *rear-facing camera*	X				
	5) The *ICDVS* **must** accommodate a second *wireless microphone* and its docking station	X				
	6) The *ICDVS video monitor* **must** be a color monitor. The size of the *ICDVS* monitors other than those built into the rear-view mirror, **must** not exceed 27.9 cm (11 inches) measured diagonally including the frame around the display if any.	X				
	7) The *ICDVS* **must** be capable of recording a minimum of three video streams and a minimum of two audio streams. The *front-facing* and *rear-facing camera* video streams **are to** be associated with the audio streams from the *wireless microphone*s and the related *metadata.* The *back-seat camera* video stream **is to** be associated with the audio stream from the *wired microphone* and the related *metadata.*	X				
	8) Any upgrade/update of the *ICDVS* software **must** be backward compatible	X				
	b. The *ICDVS* enhanced configuration **must** provide the same *capabilities as the ICDVS basic configuration* and satisfy the following criteria:	X				
	1) The *ICDVS* enhanced configuration **must** include a Graphical User Interface (GUI) to operate with the existing vehicle *MDT*/*MWS* to provide the full *ICDVS* control and viewing capability as defined in 1.b.2) and1.b.3).	X			X	
	2) The *ICDVS* Graphical User Interface (GUI) **must** be capable of operating on a wide range of computers including Panasonic Toughbook and General Dynamics Gobook equipped with Windows XP SP3 with Pentium 4m processor and 1024 MB RAM; Windows XP SP3 with Intel Core i5-2520M CPU @ 2.50GHZ with 4 GB RAM; and Windows 7 capable Pentium processor.	X			X	
	3) The Offeror **shall** include in their proposal a technical document that makes reference to how the proposed *ICDVS* would allow a 3rd party Integrated Police Vehicle (IPV) system to control and display all of the features of the *ICDVS.* The technical document could include details such as: electrical signal interfaces, protocol definitions, the licenses necessary to integrate the equipment and license fees for the interface and protocol data.	X				
	4) **(Rated)**The *ICDVS* enhanced configuration **should** operate without the controller and without the monitor of the basic configuration	X		X		

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		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
	c. The *ICDVS* wire/wireless configuration **must** consist of *all the components and capabilities of the ICDVS basic or enhanced configuration and **must** have the capability to wire/wirelessly export DME from the vehicle to the Active or Archival Storage server.*	X				
	1) *The capability to wire/wirelessly export* audio/video from the vehicle **is to** be upgraded/enabled in the *basic configuration and in the enhanced configuration*	X				
	2) The *active storage* and the *archival storage* of *ICDVS* recordings **must** be interoperable with either of the following operating system standards: Windows 2008 R2 SP1 64 bit, Red Hat Linux 6.x and Novell SUSE Linux 11	X				
	d. All *ICDVS* hardware and/or software iterations, basic, enhanced and wire/wireless configurations **must** be upgradable	X				
2. The *ICDVS* **must** be able to *record* without the image being displayed or the sound being heard	a. The *ICDVS* monitor **must** be capable of displaying a live picture from the system cameras when the system is on (even if recording is not in progress).	X		X		
	b. The *ICDVS* audio/*video monitor* **must** include a system speaker to provide monitoring of live audio from the *wireless microphone* as well as of recorded sounds during the playback mode. The *ICDVS* **must** contain a readily accessible control to adjust the volume and enable and disable monitoring of live audio.	X		X		
3. *ICDVS* **must** be capable of creating an audit trail of the system usage and of *DME* recordings	a. The *ICDVS* **must** be capable of allowing *operators* to input information required for the *Audit Log not otherwise automatically captured by the system.(See 3,c)*	X		X		
	b. The *ICDVS* video management software **must** be capable of *exporting metadata* along with audio/video recordings and creating an *Audit Log* in a readable format.	X		X		
	c. When *DME* is wire/wirelessly *export*ed, the *ICDVS Audit Log* **must** contain, as a minimum: 1) the identification of person or system receiving the *export* 2) the time and date of the *export* 3) the *verification* check performed and logged to validate the *DME* immediately prior to the *DME is exported* 4) the identification of the source of the *DME* (operator's name or vehicle identification).	X		X		
	d. The *ICDVS Audit Log* **must** *record* system-level details and events at least each time status changes.	X		X		

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
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Functional Requirements	**Technical requirements**	***Review***	***Location* (See definition)**			
	e. **(Rated)** System-level details of *the Audit Log* **should** include: 1) the date and time of system-related event 2) the vehicle identification 3) the officer identification 4) the recording device information i. including manufacturer ii. model number 5) the hardware identification including manufacturer and model number 6) the software version 7) the system status change i. boot up ii. power on 8) the component status change indicators i. recording full ii. camera failure iii. microphone failure iv. system ready	**X**		**X**		
4. *ICDVS* in-vehicle *removable solid state storage media* **must** be protected against unauthorized removal from the recorder	a. The *ICDVS* in-vehicle *removable solid state storage media* **must** be secured using a mechanism that prevents unauthorized removal of the media from the recorder.	**X**		**X**		
5. *ICDVS* in-vehicle *removable solid state storage media* **must** be non-*proprietary*	a. The *ICDVS* in-vehicle *removable solid state storage media* **must** be a commercially-available product of a non-*proprietary format*.	**X**		**X**		
6. *ICDVS* recorder **must** be protected against unauthorized removal.	a. The *ICDVS* recording device **must** be capable of being physically mounted in the vehicle, following the *ICDVS* manufacturer's recommendations, to prevent removal without tools and deter theft of the device.	**X**				
	b. The *ICDVS* recording device **must** be mountable in the vehicle cockpit (such as in a ceiling console, in a console between front seats or in the glove compartment) and in the trunk.	**X**				
	c. The *ICDVS* recording device **must** not exceed the following dimensions: width: 29.3 cm (11.5 inches), height: 10.16 cm (4 inch); depth: 26.67 cm (10.5 inches)	**X**				
7. Once installed, *ICDVS* **must** not be a hazard during a reasonably foreseeable crash.	a. *ICDVS* items installed or located in the interior of the vehicle per the manufacturer's installation instructions and supplied hardware **must** remain in place during a reasonably foreseeable crash.	**X**				
	b. Any *ICDVS* items installed in the interior of the vehicle **must** meet the requirements stated in Federal Motor vehicle Safety Standard 201 (October 1, 2002) Occupant Protection in Interior Impact.	**X**				
8. In-vehicle *ICDVS* components **must** not be a potential for injury to vehicle occupants	a. *ICDVS* exposed surfaces, corners, fasteners and controls that could be contacted by an occupant during a collision **must** be of a design that minimizes the potential for injury.	**X**				
	b. No *ICDVS* or components **must** be installed in any original vehicle manufacturer's designated airbag deployment zone.	**X**				

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Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
	c. *ICDVS* manufacturers **must** provide the necessary brackets, mounting hardware and installation instructions that if followed properly, will ensure the vendor's equipment is installed in accordance with all appropriate Federal Motor Vehicle Safety Standard.	X				
	d. If the *ICDVS* **is to** be mounted overhead, the mounting bracket for the control panel **must** not require any holes or cuts to the interior headliner	X				
	e. If the *ICDVS* **is to** be mounted overhead, the *ICDVS* manufacturer **must** specify equipment-mounting locations in the installer's guide or owner's manual, or to provide a list of vehicles for which the vendor's systems will meet this specification.	X				
9. All in-vehicle *ICDVS* controls and components **must** minimize driver distraction and fatigue.	a. All *ICDVS* controls and components **must** be located and designed to minimize driver distraction.	X			X	
	b. The *ICDVS front-facing* camera **must** be mounted in front of the rear view mirror without obstruction of driver's vision.	X			X	
	c. *ICDVS* control graphical user interface (GUI) **must** be designed and organized to minimize officer workload.	X			X	
	d. The *ICDVS* control graphical user interface (GUI) **must** control cameras, microphones and recorder fully and individually.	X		X		
	e. *ICDVS record* button on the control graphical user interface (GUI) **must** be readily identifiable by size, color, location and/or other design features.	X		X		
	f. ICVDS *record* button on the controller **must** activate even if officers are wearing gloves.	X			X	
	g. When installed in accordance with the manufacturer's instructions, *ICDVS* equipment **must** be located to minimize interference with the view of the driver.	X			X	
	h. When installed in accordance with the manufacturer's instructions, *ICDVS* equipment **must** be located to minimize interference with the view of the front-seat passenger.	X			X	
	i. *ICDVS* components **must** be illuminated for ready identification during period of darkness. Backlit controls are preferred. The illumination level **must** be controllable from bright to dark. The operator **must** have the ability to blackout the system on demand.	X		X		
10. The in-vehicle *ICDVS* equipment, and any upgrade, **must** not adversely affect, or be adversely affected by, any other in vehicle	a. The in car video system **must** not interfere with any electronic systems of the RCMP vehicles (i.e. siren controller, etc).	X			X	
	b. The *ICDVS* must comply with the emission limits and labelling requirements set out in the Interference Causing Standard ICES-003, 'Digital Apparatus', published by Industry Canada. All devices tested must bear the appropriate labels indicating trade name, model number, and the words indicating Industry Canada ICES-003 compliance	X				

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
RCMP electric and/or electronic system or component	c. RCMP police vehicles utilize high powered mobile two-way radio transmitters as well as other transmitting communications devices. This high level of electromagnetic radio frequency energy has been known to affect the operation of electronics not designed with sufficient protection against external transmitting sources. The *ICDVS* system **must** maintain consistent audio/visual recording quality while subject to interference from the following sources: 1. High-powered radio frequency transmissions 2. Other radio frequency interference (including *UHF*, *VHF*, and *HF* transmitters) 3. Automobile alternator, ignition and electrical systems 4. Fan motors from automobile heaters and air conditioners 5. Other patrol vehicle electrical systems to include radios, emergency lights, sirens, mobile data computers, and speed measuring devices 6. High-voltage power line, traffic signals, neon signs, etc.	**X**			**X**	
	d. When in operation, the *ICDVS* **must** not generate electromagnetic interference or radiation that interferes with communications within RCMP police vehicle.	**X**			**X**	
	e. The police radio communications system is critical to RCMP operations, public and police officer safety. As such, it is imperative that any electronic devices installed or utilized in a police vehicle be designed such that any effects of radio frequency disturbances are eliminated or controlled so as not to interfere with police two-way radios or other sensitive electronic devices. Protection **must** be provided within the following Industry Canada radio frequency bands used for two-way radio communications: IC SRSP 500: 138 to 144 MHz and 148 to 174 MHz bands IC SRSP 501: 406 to 430 MHz and 450 to 470 MHz bands IC SRSP 502: 806 to 824 MHz and 851 to 869 MHz bands IC SRSP 511: 768 to 776 MHz and 798 to 806 MHz bands	**X**			**X**	
11. The in-vehicle *ICDVS* **must** be compatible with the existing RCMP traffic radar units	a. The ICDV **must** to be capable of recording the target vehicle and the patrol car speeds *capture*d by the following speed measuring devices used by the RCMP. 1. Stalker II SDR 2. Stalker SDR 3. Kustom Signals Eagle. **4.** Kustom Signals CRS832 Conventional Mode (K-band) **5.** Kustom Signals CRS833 Multi-Mode (K-band) Raptor PR-1 The Offeror **shall** make the necessary arrangements to work with the speed measuring device manufacturers and ensure that the Offeror's *ICDVS* properly interfaces the speed measuring devices.	**X**			**X**	
12. The in-vehicle *ICDVS* equipment and components **must**	a. The in-vehicle *ICDVS* equipment **must** operate within the range of temperatures between -30 and +50 degrees Celsius without the use of environmental control housing.	**X**				

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Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
operate under all the expected environmental conditions throughout Canada	b. All *ICDVS* in-vehicle components **are to** meet successfully the following MIL-STD version 810-F and IP Standard. Test results from an accredited test laboratory or an accredited engineer demonstrating compliance to the 810-F and IP tests described below must be submitted with the technical offer: 1. Temperature (high and low) method 501.4, procedure I and II and 502.4 procedure I and II respectively 2. Humidity - method 507.4 (810-F) 3. Drop - Method 516.5 procedure IV (810-F) 4. Vibration - Method 514.5 procedure I, Category 24 (810-F) 5. Dust Resistance - method 510.4, Procedure I (810-F) or IP 54 Standard; and 6. Water resistance - method 506.4 Procedure III (810-F). or IP 54 Standard	X				
13. The in-vehicle *ICDVS* components **must** be designed and installed in a manner that minimizes the potential for shock, fire hazards and damage from electrical power	a. All *ICDVS* electrical equipment supplied under the contract must be certified or approved for use in accordance with the Canadian Electrical Code Part 1 prior to delivery, by an agency accredited by the Standards Council of Canada. Systems **must** bear the certification logo that is applicable to the accredited agency. Current accredited agencies include, but are not limited to: - Canadian Standard association (CSA); - Underwriters' Laboratory Inc (cUL) (cULus); - Underwriters' Laboratories of Canada (ULC); - Entela Canada (cEntela); - Intertek Testing Services (cETL); - Met Laboratories (cMET); and - OMNI Environmental Services Inc (cOTL)	X				
	b. The *ICDVS* **must** filter and regulate its power source and be protected against short-circuit. The voltage supplied to the system **must** meet the manufacturer's specifications and not to vary with fluctuations of the system's electrical system voltage between 10.5 and 18 volts. The *ICDVS* **must** draw no more than 4 amps at 12 volts while operating 1 *front-facing camera*, 1 *rear-facing camera*, 1 *back-seat camera* and microphone, 2 *wireless microphone*s, 1 audio/*video monitor*, 1 controller and 1 recorder.	X			X	
	c. *ICDVS* equipment **must** be properly fused to minimize shock and fire hazard.	X				
	d. All *ICDVS* wiring **must** meet applicable industry standards.	X			X	
	e. All *ICDVS* **must** be properly grounded using the same industry standards as above and, if necessary due to the presence of hazardous voltage or amperage levels, **must** be equipped with ground fault interrupters to prevent shock and electrocution hazards	X			X	
	f. *ICDVS* manufacturers **must** provide information in their installer's guides or owners' manuals that specifies the proper wiring, fuses, connectors, and connection points with the vehicle electrical system and grounding points.	X				
	g. The *ICDVS* **must** be protected from damage due to input of voltage, reverse polarity and electrical transients that may be encountered.	X				
	h. Loss of operating power or disconnection from the vehicle battery up to 60 hours **must** not result in the *ICDVS* requiring programming. Sudden *ICDVS* loss of power **must** not cause loss of any *DME* not yet *export*ed from the *ICDVS*.	X			X	

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		Manufacturer Documentation		***Witnessing System Operation***	***RCMP Lab Testing***	
Functional Requirements	**Technical requirements**	***Review***	***Location* (See definition)**			
14. The *ICDVS front-facing* and *rear-facing cameras* **must** be small in size and *capture* colour images under most street/highway lighting conditions	a. *ICDVS front-facing* and *rear-facing cameras* (including the lens but not the cabling) **must** not exceed 570 grams (20 ounces) in weight and **must** not exceed the following dimensions: 8.9 cm (3.5 inches) in width, 8.9 cm (3.5 inches) in height and 16.5 cm (6.5 inches) in depth.	X			X	
	b. *ICDVS* recordings from the *front-facing* and *rear-facing cameras* **must** be capable of ensuring the legibility of license plates at a minimum of 4.8 m (16 feet) from the cameras.	X			X	
	c. *ICDVS front-facing* and *rear-facing cameras* **must** be capable of providing a usable image with a minimum illumination of 1 lux	X			X	
	d. The *ICDVS front-facing* and *rear-facing cameras* and lens **must** be equipped with autofocus, re-focus, automatic exposure, and automatic white balance.	X		X		
	e. The *ICDVS front-facing* and *rear-facing cameras* **must** provide both automatic and manual focus capabilities which are operator selectable.	X		X		
	f. *ICDVS front-facing* and *rear-facing cameras* **must** have a backlight setting that reduces glare and bleed over from outside lighting.	X		X		
	g. *ICDVS front-facing* and *rear-facing cameras* lens **must** have a minimum of 10X optical zoom lens and 4X digital zoom.	X		X		
15. The *ICDVS front-facing* and *rear-facing cameras* **must** *capture* interaction between the officer and the driver and occupants inside or near a stopped vehicle located in front of the car/camera	a. The *ICDVS front-facing* and *rear-facing cameras* **must** provide a minimum *field of view* of at least 40 degrees with all optional zoom settings at the full wide angle view.	X			X	
16. The *ICDVS front-facing* and *rear-facing cameras* direction **must** be manually adjustable	a. The *ICDVS front-facing* and *rear-facing cameras* **must** be capable of being rotated 360˚ on their mounts in a horizontal plane or 180˚ in either direction from its forward-facing position without having to loosen any screws or knobs. The camera position is not to shift position without intentional intervention from the operator.	X		X		
17. The *ICDVS back-seat camera* **must** cover sufficient *field of view* to *capture* activities in the back-seat area	a. The *ICDVS back-seat camera* **must** be able to provide a focused image with a *field of view* of 127 cm (50 inches) at an object distance of 76.2 cm (30 inches) with infrared capabilities.	X		X		
	b. The *ICDVS back-seat camera* **must** have a signal-to-noise ratio of at least 46db.	X				
18. The *ICDVS* components **must** be designed in a manner to minimize injury to the operator	a. Each *ICDVS* primary and secondary battery **must** comply with *UL* 1642, Lithium Batteries and/or *UL* 2054, Household and Commercial Batteries	X				
	b. Any *ICDVS* component carried on the officer's person **must** meet Underwriters Laboratories Standards for shock/electrocution and burn prevention.	X				
	c. Any *ICDVS* component worn or carried by the officer **must** be smooth construction properly rounded or chamfered to minimize the possibility of injury. The *ICDVS* components **must** be free of sharp points or edges that could cause injury during a fight, slip, fall, or other type of incident. In addition, all *ICDVS* clips and retention devices **must** be designed to minimize the possibility of pinch points that could cause injury.	X			X	

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
	d. *ICDVS* parts that can come into contact with human skin **must** not be allowed to reach a temperature capable of causing a burn injury. Items carried on the officer's person or uniform **must** not pose an undue risk of injury.	X			X	
19. The *ICDVS wireless microphone*s **must** ensure remote recording operation while the members are interacting with conductors/occupants of stopped vehicles during a normal shift	a. The *wireless microphone*s **must** be equipped with a clip or other device to allow the microphone to be placed anywhere on the officer's uniform.	X		X		
	b. The *ICDVS* **must** incorporate a remote *wireless microphone* and transmitter in a device to be worn by the officer.	X		X		
	c. Each *wireless microphone* transmitter **must** be equipped with an in-vehicle docking station which synchronized the operating transmitter frequency to the mobile video system and recharge the *wireless microphone* batteries. Once programmed the receiver **must** only accept audio from that transmitter without any manual configuration by the operator.	X		X		
	d. The *ICDVS wireless microphones* **must** contain a memory-free rechargeable battery that may be replaced by the operator with commonly accessible tools, The rechargeable battery **must** have a minimum battery-life of 12 hours (*passive mode*) and a talk time of 3.5 hours (active mode).	X			X	
	e. The *ICDVS wireless microphone*/transmitter assembly and wireless network *export* devices **must** transmit within frequency bands approved by Industry Canada (Spectrum Management)	X				
	f. The *ICDVS wireless microphone* and transmitter assembly **must** transmit intelligible audio to the vehicle-mounted recorder and monitor at a range of 300 meters (1,000 feet), line of sight under unobstructed conditions and with no interference.	X		X		
	g. The *ICDVS wireless microphone* and transmitter assembly **must** be able to activate audio and video recording from the remote transmitter.	X		X		
	h. The *ICDVS wireless microphone* transmitter **must** contain an internal antenna.	X		X		
	i. The omnidirectional *ICDVS wireless microphone*s **must** be capable of capturing sounds greater than or equal to 50 dB sound pressure level at a distance of one meter within the frequency range of 200 to 4,000 Hz to the minus six dB points while at the same time the audio recording **must** not be overdriven by the operator's speech. The audio recording **must** be in an uncompressed *format* (minimum 8 bit μ-law, 8 Khz sampling).	X			X	
	j. The *wireless microphone*s **must** be able to automatically turn on when the recording device is activated and off when the recording device is deactivated.	X		X		
	k. When recording, the audio from the *wireless microphone*(s) **must** be synchronized with the video from the *front-facing camera* and from the *rear-facing camera* if installed	X		X		
	l. The audio transmitted from the *wireless microphone*s **must** be through digital transmission protocol such as Digital Spread Spectrum (DSS), Frequency Hoping Spread Spectrum (FHSS), Octagonal Frequency Division Multiplexing (OFDM) and `the equipment **shall** provide no noticeable distortion of the signal or emphasis or de-emphasis of frequency within the frequency range *captured*.	X				
20. The *ICDVS* must include a *wired microphone* to ensure	a. The *ICDVS* **must** incorporate a *wired microphone* mounted in the vehicle.	X		X		
	b. The audio from the *wired microphone* **must** be synchronized with the video from the *back-seat camera*	X		X	X	

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
in-vehicle recording operation while the back seat is occupied	c. The *ICDVS wired microphone* **must** be capable of capturing sounds greater than or equal to 50 dB sound pressure level at a distance of one meter within the frequency range of 200 to 4,000 Hz to the minus six dB points while at the same time the audio recording **must** not be overdriven by the monitored persons' speech. The audio recording **must** be in an uncompressed *format* (minimum 8 bit μ-law, 8 Khz sampling).	X			X	
21. The in-vehicle *ICDVS* **must** provide adequate controls and indicators	a. The *ICDVS* controller **must** provide the following controls: 1. Power on/off 2. Play 3. *Record* start 4. Fast forward 5. Rewind 6. Stop 7. Pause 8. Zoom in/out 9. Autofocus 10. Backlight compensation 11. Manual focus 12. Camera selection 13. *Wireless microphone* reception 14. *Wireless microphone record* activation status.	X		X		
	b. The *ICDVS* **must** provide the following indicators: 1. System Power on 2. Microphone on 3. Media inserted and operational with remaining capacity/time available 4. Recording 5. Fast forward 6. Rewind 7. Stop 8. Time counter 9. Diagnostic display showing results (see item d below).	X		X		
	c. The *ICDVS* **must** perform a diagnostic to detect malfunction or loss of functionality of the recorder, cameras and display. The diagnostic **must** be performed on system start up and periodically thereafter. Any malfunction or loss of functionality of the recorder, cameras and display **must** be documented in the *system audit log*.	X		X		
	d. **(Rated)** The *ICDVS* **should** perform a diagnostic to detect malfunction or loss of functionality of microphones on system start up and periodically thereafter.	X		X		
	e. (Rated) Any *ICDVS* malfunction or loss of functionality of the recorder, cameras, display and microphones should be indicated to the operator immediately.	X		X		
	f. The *ICDVS* **must** provide the following minimum media diagnostics: 1. Indicate the amount of storage space remaining on the media; and 2. Send a notification to the operator (audible/visual) that storage is reaching its maximum capacity.	X		X		
22. The *ICDVS* **is to**	a. The *ICDVS* in-vehicle equipment **must** have the capability to display in real-time the date/time.	X		X		

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
display system-relevant information	**b. (Rated)** The *ICDVS* in-vehicle equipment **should** have the capability to selectively display in real-time the operator or vehicle identification information and system status indicators (video recording on/off, microphone(s) on/off), target and patrol speeds from RCMP radar systems).	X		X		
	c. The *ICDVS* in-vehicle equipment **must** have the capability to display during playback the date/time of *DME* creation *capture*d in the *metadata* and not superimposed onto, added to, or be embedded in the video stored on the recording.	X		X		
	d. **(Rated)** The *ICDVS* in-vehicle equipment **should** have the capability to selectively display during playback such items *capture*d in the *metadata* and not superimposed onto, added to, or embedded in the video stored on the recording such as the operator or vehicle identification information, emergency light indication, siren indication, brake indication, crash indication, system status indicators (video recording on/off, microphone(s) on/off), target and patrol speeds from RCMP radar systems).	X		X		
	e. The *ICDVS* video management software **must** have the capability to display during playback the date/time of *DME* creation *capture*d in the *metadata* and not superimposed onto, added to, or be embedded in the video stored on the recording.	X		X		
	f. **(Rated)** The *ICDVS* video management software **should** have the capability to selectively display during playback such items *capture*d in the *metadata* and not superimposed onto, added to, or embedded in the video stored on the recording such as the operator or vehicle identification information, emergency light indication, siren indication, brake indication, crash indication, system status indicators (video recording on/off, microphone(s) on/off), target and patrol speeds from RCMP radar systems) and *Audit log.*	X		X		
	g. The displayed items *capture*d in the *ICDVS metadata* **must** not overwrite image information.	X		X		
23. The in-vehicle *ICDVS* **must** be capable of pre-event and post event recording	a. The *ICDVS* recorder **must** be capable of storing at least 60 seconds of pre-event video prior to being activated.	X		X		
	b. **(Rated)** The extent of duration of the *ICDVS* pre-event video prior to recorder being activated **should** only be programmable by the system administrator	X		X		
	c. The *ICDVS* **must** have the capability of disabling the audio *capture* while continuing to *capture* the remaining *DME* items.	X		X		
24. The in-vehicle *ICDVS* **must** have automatic recording triggers	a. The *ICDVS* recording functions **must** be activated by any of the following methods: 1. Operator pushes the "*record*" button 2. Activation of the emergency lights and/or sirens 3. Operator activates the "*record*" button on the *wireless microphone* transmitter. 4. Activation on vehicle crash	X		X		
	b. The automatic crash activation function **must** not be tied into any of the vehicle systems (i.e. air bags).	X				
25. The in-vehicle *ICDVS* **must** include adequate controls to ensure *integrity* of *DME* from *capture* to storage	a. The *ICDVS* **must** have the capability to restrict access to the critical programming functions (such as time/date features) to the system administrator.	X		X		
	b. The *ICDVS* **must** have the capability of preventing the operator from erasing, altering, and/or recording over previously recorded information from in-vehicle *ICDVS* components.	X		X		
	c. The *ICDVS* user interfaces **must** prevent the input of invalid data that exceeds the systems expected ranges.	X		X		
	d. The *ICDVS* **must** provide a mechanism to *capture* the time and date of *DME* creation.	X		X		

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
	e. Date/time generator **must** be self-adjusting for daylight saving time and leap years variance.	X		X		
	f. The recorder **must** provide a continuous synchronized time reference for the video	X		X		
	g. Time reference of the *ICDVS DME* elements (video, audio, *metadata*) **must** be consistent within all system components.	X		X		
	h. The *ICDVS* **must** automatically set the correct time and date following interruption of power.	X		X		
	i. The *ICDVS* **must** incorporate an automatic trigger to stop recording when previously recorded *DME* will be overwritten and immediately notify the operator.	X		X		
	j. All elements of the *ICDVS DME* **must** remain accurate with respect of the recording as it was *capture*d.	X		X		
	k. The *ICDVS* recording device **must** indicate when *removable solid state storage media* is not inserted into the recorder.	X		X		
	l. The *ICDVS* Recorder, the *Active Storage*, and *Archival Storage* Systems clocks **must** be capable of being synchronized to an external time reference.	X		X		
	m. Recorders **must** have backup power to maintain time/date in power loss for a minimum period of 30 days.	X				
	n. Recorders **must** have programmable daylight/standard time and leap years adjustments.	X				
27. The *ICDVS* in-vehicle audio/video recording device **must** have adequate storage capacity to meet operational requirements	a. The *ICDVS* **must** be capable of minimum recording 12 uninterrupted hours at a minimum frame rate equivalent of 30 ± 2% frames per second per camera.	X				
28. The *ICDVS* recording device/software **must** allow case management	a. The *ICDVS* program **must** allow the recording device to store all data relevant to each incident together: 1) An incident **must** be defined as the period between the start and the stop recording 2) Data **must** be filed in a Windows-readable directory structure 3) Different incidents **must** be stored in separate files or directories 4) Truncated recordings **must** be playable as one contiguous footage by the video management software 5) File names **must** comprise the serial number of the unit and the date and time of the recording 6) *Metadata* **must** comprise unit serial number, date and time, and **must** be displayed on the screen in a legible but unobtrusive manner or in a operator defined position 7) Data **must** be stored on a *removable solid state storage media* and to be wire/wirelessly *export*able to *active storage*.	X		X		
	b. The *ICDVS* video management program **must** allow case management on *Active Storage* and on Archival storage on small, medium and large computers	X				

In-Car-Digital Video System (*ICDVS*)		Compliance Verification Method				Offeror can provide Y/N
		Manufacturer Documentation		***Witnessing System Operation***	***RCMP Lab Testing***	
Functional Requirements	**Technical requirements**	***Review***	***Location* (See definition)**			
	c. The video management program **must** allow for: 1. Indexing/searching by officer ID (or car ID), time and date, case file/occurrence number 2. assigning/modifying and monitoring purge due date 3. automatically purging records reaching due date	**X**		**X**		
29. The *ICDVS* recording file *format*s **must** be suitable for evidence and post processing by the RCMP	a. The *ICDVS* **must** provide the *original DME* files. The file **must** include all *metadata* in an accessible *format*.	**X**		**X**		
	b. Unless the original *format* provided by the *ICDVS* is in a Windows Media Player compatible *format* that is viewable and playable without the need for *proprietary codec*s, players, or viewers available from only the system manufacturer, the *ICDVS* video management software **must** provide two interoperable *format*s of the *DME* (images, sounds, *metadata* and *DME Audit Log*): original (non-converted) *DME* and *converted DME.* The *converted DME* **must** be in a Windows Media Player compatible *format* that is viewable and playable without the need for *proprietary codec*s, players, or viewers available from only the system manufacturer.	**X**		**X**		
	c. The *ICDVS conversion* mechanism, when used, **must** provide an accurate representation of the images, sounds and *metadata* recorded.	**X**				
	d. If the *ICDVS* provides the original recording in a non-converted *format*, the Offeror **must** provide the non-converted *format* player license free	**X**				
30. The *ICDVS* **must** include adequate controls to ensure *authentication* and *integrity* of *DME* during wire/wireless data *export*	a. During a wire/wireless data *export*, particularly following communication interruptions, the system **must** ensure that the *DME* on the *ICDVS Active Storage* is an exact *duplicate* to any data on the recorder prior to the information being deleted from the recorder.	**X**		**X**		
	b. A wire/wireless network used to *export* the *DME* from the *ICDVS* recorder to *Active Storage* **must** create a secure connection for the *DME* to be *export*ed using the following security standards: 1. Customized network name 2. Disabled SSID/ESSID (Network name) broadcast; 3. WPA2 AES 256 *encryption* 4. *Authentication PSK (Pre Shared Key)*	**X**			**X**	
	c. (**Rated**) A wire/wireless network used to *export* the *DME* from the *ICDVS* recorder to *Active Storage* **should** create a secure connection for the *DME* to be *export*ed using *IEEE - 802.11G or better*	**X**				
31. The updating/upgrading of *ICDVS* to be user-friendly	a. The updating/upgrading of *ICDVS* **must** not require a connection to Internet	**X**		**X**		
	b. The updating/upgrading of *ICDVS* **must** be intuitive and achievable by system *operators* having minimal computer knowledge	**X**		**X**		
32. User guide and installation manuals **must** be supplied	a. User guide and installation manuals **must** be supplied with each *ICDVS*	**X**				
	b. All manuals supplied **must** be professionally written and produced	**X**				
	c. All manual supplied **must** be of commercial print quality	**X**				
	d. All manuals are in digital *format*, either online or on removable media	**X**				
	e. All manuals **shall** be provided in English	**X**				

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		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
33. Operator training package **must** be provided	a. A minimum of 4 hour hands-on train-the trainer operation/maintenance training package, suitable for a maximum of eight (8) person group, **must** be provided. b. The operation/maintenance training package **must** contain at least, but not limited to, basic operating procedures, basic hardware/software trouble shooting procedures, including the use of any diagnostic tool, and major *ICDVS* component replacement c. Individual training packages **must** be provided at locations identified by the RCMP at call up	X				
34. Installer training package **must** be provided	a. A minimum of 4 hour hands-on train-the trainer install/maintenance training package, suitable for a maximum of eight (8) person group, **must** be provided.	X				
	b. The install/maintenance training package **must** contain at least, but not limited to, basic operating procedures, all in-vehicle *ICDVS* components installation instructions, basic hardware/software troubleshooting procedures, including the use of any diagnostic tool, and all *ICDVS* component replacement	X				
	c. The install/maintenance training package **is to** include certification when required as a condition for product warranty	X				
	d. Individual training packages **must** be provided at locations identified by the RCMP at call up	X				
35. Individual *ICDVS* components **must** be available for purchase	a. *ICDVS* components that are used or operated as separate units **must** be individually available for purchase. Such components include:	X				
	1. front-facing/*rear-facing camera*s	X				
	2. front-facing camera mount	X				
	3. rear-facing camera mount	X				
	4. rear-facing camera wiring and cabling	X				
	5. *back-seat camera*s	X				
	*6. back-seat camera microphone*s (if not built in the *back-seat camera*s)	X				
	7. *wireless microphone*s	X				
	8. *wireless microphone*s batteries	X				
	9. *wireless microphone* docking stations	X				
	10. controllers	X				
	11. audio-video monitors	X				
	12. digital recorders	X				
	13. removable solid state storage media	X				
	14. hardware/software and wiring/cabling to interface with the MDT/MWS	X				
	15. Cabling for interfacing *ICDVS* and the following speed measuring devices used by the RCMP:	X				
	i) Stalker II SDR	X				
	ii) Stalker SDR	X				
	iii) Kustom Signals Eagle	X				
	iv) Kustom Signals CRS832 Conventional Mode (K-band)	X				
	v) Kustom Signals CRS833 Multi-Mode (K-band) Raptor PR-1	X				

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		Manufacturer Documentation		*Witnessing System Operation*	*RCMP Lab Testing*	
Functional Requirements	**Technical requirements**	*Review*	*Location* (See definition)			
36. **Manufacturer registration under ISO 9001:2000 or ISO 9001:2008 program**	a. The technical offer must include proof that, in respect of the ICDVS being offered, the Manufacturer, whether this is the Offeror or a third party, is registered under ISO 9001:2000 or 9001:2008 by an accredited registrar under the ISO 9001:2000 or 9001:2008 Program for the manufacturing facility where the specific ICDVS being offered is manufactured. The Offeror must identify the facility location by providing the complete address where the proposed ICDVS is manufactured/assembled. The scope of the registration is also required to be specified. ISO registration of a facility after the closing date for this RFSO does NOT satisfy this requirement	X				