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## **Criminal Justice Interview Room Recording System Standard**

**NIJ Standard-100x.00**

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The preparation of this standard was sponsored by the National Institute of Justice.

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance; the Bureau of Justice Statistics; the Office for Victims of Crime; the Office of Juvenile Justice and Delinquency Prevention; and the Office of Sex Offender Sentencing, Monitoring, Apprehending, Registering, and Tracking (SMART).

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### Special Technical Committee

This standard was developed by a Special Technical Committee of practitioners, technical experts, and others with experience in standards development and conformity assessment. Committee members, their organizations, and their professional affiliations are listed in Table 1 and Table 2.

**Table 1. Practitioners**

Type	Name	Organization	Professional Affiliation

**Table 2. Technical Experts and Others**

Type	Name	Organization	Expertise
Federal			
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Private			
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### Advisory Working Group

The work of the Special Technical Committee was reviewed by an Advisory Working Group (AWG) made up of senior-level representatives from stakeholder organizations and individuals with experience in standards development and conformity assessment. Organizations represented on the AWG are listed in Table 3 below.

**Table 3. AWG Members**

<b>Organization</b>
Federal Bureau of Investigation (FBI)
FBI/NIJ Scientific Working Group on Imaging Technology
Fraternal Order of Police
International Association of Chiefs of Police
Law Enforcement and Emergency Services Video Association
National Institute of Standards and Technology/Law Enforcement Standards Office
National Sheriffs' Association
U.S. Customs and Border Protection

### Steering Committee

The Steering Committee generally directed the effort and helped to ensure coordination among relevant federal programs. The following were the members of the Steering Committee (shown in Table 4 with their respective organizations during the development of this document).

**Table 4. Steering Committee Members**

<b>Member</b>	<b>Organization</b>	<b>Title</b>
Kristina Rose, Chair	U.S. Department of Justice, Office of Justice Programs, National Institute of Justice	Deputy Director
Pamela Cammarata	U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Assistance	Associate Deputy Director
Marc Caplan	U.S. Department of Homeland Security, Science and Technology Directorate, Support to the Homeland Security Enterprise and First Responders Group	Chief of Innovative Technology Programs
Phillip Mattson	U.S. Department of Homeland Security, Science and Technology Directorate, Office of Standards	Acting Director
Bernard Melekian	U.S. Department of Justice, Office of Community Oriented Policing Services	Director
Gary Rogers	U.S. Department of Homeland Security, Federal Emergency Management Agency	Senior Policy Advisor
Mark Stolorow	U.S. Department of Commerce, National Institute of Standards and Technology, Law Enforcement Standards Office	Director

## FOREWORD

This document is a voluntary performance standard for interview room recording systems for use by criminal justice agencies. It defines both performance requirements and the methods used to test performance. In order for a supplier or other entity to claim that a particular interview recording system model satisfies this National Institute of Justice (NIJ) standard, the model must be in compliance with this standard as determined in accordance with this document and the associated document, *Criminal Justice Interview Room Recording System Supplier's Declaration of Conformity Requirements*, NIJ CR-100x.00. Both this standard and the associated Supplier's Declaration of Conformity requirements document are produced as a part of the Standards and Testing Program of the U.S. Department of Justice, Office of Justice Programs, NIJ, as is a third associated document, *Criminal Justice Interview Room Recording System Selection and Application Guide*, NIJ Guide-100x.00.

All requirements stated in this standard, including those that explicitly employ mandatory language (e.g., "shall") are those necessary to satisfy the standard. Nothing in this document is intended to require or imply that commercially available interview room recording systems for use by criminal justice agencies must satisfy this standard.

This document is a performance and testing standard and, therefore, provides precise and detailed test methods. Requirements for manufacturers, suppliers, or other entities seeking to demonstrate conformity with this standard are provided in a separate document, *Criminal Justice Interview Room Recording System Supplier's Declaration of Conformity Requirements*, NIJ CR-100x.00. Those seeking guidance concerning the selection and application of interview room recording systems for criminal justice should refer to the most recent version of the *Criminal Justice Interview Room Recording System Selection and Application Guide*, NIJ Guide-100x.00, which explains the standard in nontechnical language and provides guidance into selecting, procuring, using, and maintaining interview room recording systems.

Although agencies are advised always to require their procurements to meet or exceed the most recent and up-to-date version of this standard, this does not necessarily mean that an agency should remove interview room recording systems that they currently have in use from service, as an interview room recording system that does not meet current standards may well be better than no interview room recording system at all.

NIJ standards are subject to continued research, development and testing, and review and modification as appropriate on an ongoing basis. Users of this standard are advised to consult the NIJ Standards and Testing Program webpage, accessed from [www.nij.gov/standards](http://www.nij.gov/standards), on a regular basis to determine whether the documents have been revised or superseded.

Technical comments and recommended revisions are welcome. Please send all written comments and suggestions to: Director, National Institute of Justice, Office of Justice Programs, U.S. Department of Justice, 810 Seventh St., N.W., Washington, DC, 20531, ATTN: NIJ Standards and Testing Program.

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Nothing in this document is intended to create any legal or procedural rights enforceable against the United States. Moreover, nothing in this document creates any obligation for

manufacturers, suppliers, criminal justice agencies, or others to follow or adopt this voluntary equipment standard.

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## CONTENTS

To be added

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## ACRONYMS

DHS	U.S. Department of Homeland Security
DME	Digital Multimedia Evidence
DOJ	U.S. Department of Justice
DVR	Digital Video Recorder
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
FCC	Federal Communications Commission
FIPS	Federal Information Processing Standard
FOV	Field of View
FPS	Frames Per Second
GOP	Group of pictures
IACP	International Association of Chiefs of Police
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IP	Internet protocol
IRRS	Interview Room Recording System
ISO	International Standards Organization
LCPM	linear pulse-code modulation
MPEG	Moving Picture Experts Group
MXF	Material Exchange Format
NIEM	National Information Exchange Model
NIJ	National Institute of Justice, U.S. Department of Justice
NIST	National Institute of Standards and Technology, U.S. Department of Commerce
NTSC	National Television System Committee
RGB	Red green blue
SAE	Society of Automotive Engineers
SI	System Internationale
SWGIT	Scientific Working Group on Imaging Technologies
UL	Underwriters Laboratories Inc.
U.S.	United States
USB	Universal Serial Bus
WAV	Waveform Audio File
XML	Extensible Markup Language

## SYMBOLS AND ABBREVIATIONS

A	ampere		in	inch		rf	radio frequency
cd	candela		IR	infrared		RH	relative humidity
cm	centimeter		kHZ	kilo Hertz		V	volt
dB	decibel		lm	lumen		VAC	volts, alternating current
°C	degree Celsius		lux	lumens per meter <sup>2</sup>		W	watt
°F	degree Fahrenheit		m	meter			
ft	foot		min.	minute			
ft/s	foot per second		mm	millimeter			
<b>g</b>	acceleration		mph	miles per hour			
g	gram		m/s	meter per second			
Hz	Hertz		ms	millisecond			

## **1. SCOPE, PURPOSE AND APPLICATION**

### **1.1 Scope**

- 1.1.1 This document is a voluntary standard. All requirements stated in this standard, including those that explicitly employ mandatory language (e.g., “shall”) are those necessary to satisfy the standard. Nothing in this document is intended to require or imply that a commercially available interview room recording system (IRRS) for use by criminal justice agencies must satisfy this standard. In order for a supplier, manufacturer or other entity to claim that a particular IRRS model satisfies this NIJ standard, however, the model must be found to comply with this standard as determined in accordance with this document and the associated document, *Criminal Justice Interview Room Recording System Supplier’s Declaration of Conformity Requirements*, NIJ CR-100x.00
- 1.1.2 This standard specifies the minimum requirements for form and fit, performance, testing, documentation, and labeling of digital IRRS models used by criminal justice officers for recording and storing digital multimedia evidence from interviews.
- 1.1.3 The form and fit requirements and performance requirements of this standard shall be met for a complete IRRS. Accessories are not required to meet the form and fit requirements and performance requirements of this standard.
- 1.1.4 This standard shall not be understood as addressing all safety concerns associated with the use of IRRSs. Users of this standard should be aware of all safety issues associated with their use. User information related to these issues is provided in the *Criminal Justice Interview Room Recording System Selection and Application Guide*, NIJ Guide-100x.00.
- 1.1.5 This standard shall not be understood as addressing the safety concerns (if any) associated with its use by testing facilities.
- 1.1.6 No supplier, manufacturer, or other entity shall claim compliance with only selected portions of this standard. The IRRS model shall meet all applicable stated requirements.
- 1.1.7 Nothing herein shall be understood to restrict any supplier from exceeding the requirements of this standard.
- 1.1.8 As appropriate (e.g., for models that employ materials or forms of construction not anticipated when this standard was developed or are not addressed by this standard), NIJ may modify the test methods of the standard or establish new ones.

### **1.2 Purpose**

- 1.1.1 The purpose of this NIJ standard is to specify minimum requirements for digital IRRSs used in small and large law enforcement agencies, correctional facilities, detention centers, and jails to record and store digital multimedia evidence (DME) from interviews with suspects, witnesses, victims, and others.

- 1.1.2 The system may be very simple for a small agency having only one interview room or may be very complex for a large agency having a series of interview rooms that are networked together.
- 1.1.3 The standard identifies test methods for verifying the minimum performance requirements are met.
- 1.1.4 The purpose of the test methods in this standard is to assess performance, and the test methods shall not be understood to specify performance levels for all situations in which systems may be used.
- 1.2 Application
  - 1.2.1 This standard applies to single-room systems that record video from at least one camera and audio from at least one microphone and to interconnected multiple-room systems, which are an expansion of the single-room system concept.
  - 1.2.2 This standard does not address performance classifications or levels of systems.

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## **2. References**

### **2.1 Associated Publications**

The following document is a companion publication to NIJ Standard-100x.00 and NIJ CR-100x.00.

NIJ Guide-100x.00. *Criminal Justice Interview Room Recording System Selection and Application Guide*. Washington, DC: U.S. Department of Justice, National Institute of Justice.

### **2.2 Referenced Publications**

The following references form a basis for and provide support for the requirements and procedures described in this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document applies, including any amendments.

#### **2.2.1 National Institute of Justice**

NIJ CR-100x.00. *Criminal Justice Interview Room Recording System Supplier's Declaration of Conformity Requirements*. Washington, DC: U.S. Department of Justice, National Institute of Justice.

#### **2.2.2 National Institute of Standards and Technology**

Federal Information Processing Standards Publication (FIPS PUB) 140-3. *Security Requirements for Cryptographic Modules*, U.S. Department of Commerce, National Institute of Standards and Technology.

FIPS PUB 180-4. *Secure Hash Standard*, U.S. Department of Commerce, National Institute of Standards and Technology.

FIPS PUB 197. *Advanced Encryption Standard*, U.S. Department of Commerce, National Institute of Standards and Technology

FIPS PUB 46-3. *Data Encryption Standard*, U.S. Department of Commerce, National Institute of Standards and Technology

#### **2.2.3 NIEM – To be added**

#### **2.2.4 SWGIT – To be added**

#### **2.2.5 Underwriters Laboratories – To be added**

### 3. DEFINITIONS

#### 3.1 General

The definitions contained in this chapter shall apply to these terms as used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings, unless the context unmistakably indicates otherwise.

#### 3.2 Definitions

- 3.2.1 **Accessories:** Any supplier-recommended or aftermarket items (including software) that can be attached to or interfaced with the system.
- 3.2.2 **Administrator level:** An unrestricted level of system access and privileges, including, but not limited to, assigning authorized user access levels, user-defined fields, and DME export and distribution.
- 3.2.3 **Audio monitor:** Device for listening to live and recorded audio.
- 3.2.4 **Authorized user level:** A limited level of system access as defined by the administrator. There may be more than one such level.
- 3.2.5 **Bit:** The smallest amount of digital information. A *bit* is restricted to being either a one or a zero.
- 3.2.6 **Bit depth:** The number of bits of information recorded for each digital sample. It directly corresponds to the resolution of each digital sample in a set of data.
- 3.2.7 **Camera:** The image acquisition device comprised of at least an image sensor and a lens.
- 3.2.8 **Capture:** The process of producing or recording the DME from a natural event.<sup>A</sup>
- 3.2.9 **Certification body:** Any body operating a product certification system. (ISO/IEC Guide 65, 1.1, 1.2)
- 3.2.10 **Channel:** One separate stream of audio or video information.
- 3.2.11 **Codec:** A device/program capable of encoding and/or decoding digital data. Codecs encode a stream or signal for transmission, storage or encryption, and decode it for viewing and listening.
- 3.2.12 **Compliant:** The condition of an IRRS model meeting or exceeding all applicable requirements of this standard, as determined pursuant and subject to the IRRS standard.
- 3.2.13 **Component:** Any material, part, or subassembly used in construction of an IRRS.

- 3.2.14 **Compression:** The reduction of data used to represent DME.
- 3.2.15 **Criminal justice:**
- 3.2.16 **Data file:** A set of binary information representing DME.
- 3.2.17 **Date/time stamping:** A software feature that automatically inserts the current date and time into the data file.
- 3.2.18 **Default settings:** Controls and settings established by the supplier prior to delivery of an IRRS (i.e., factory settings).
- 3.2.19 **Digital image:** A picture represented by discrete numerical values organized in a two-dimensional array or video stream.
- 3.2.20 **Digital multimedia evidence (DME):** Data representing audio essence, video essence, metadata and any other information attached to a digital file. DME may be classified as follows:
- Compressed DME: Data that has been transcoded from the original DME resulting in a reduced amount of data required to represent the original data set. Compressed DME shall be interoperable.
  - Original DME: Data recorded and retrieved to media in its native file format (i.e., first usable form).
  - Uncompressed DME Copy: A transcoded version of the original DME that is interoperable as a Material eXchange Format (MXF) file and where no loss of video information occurs.
- 3.2.21 **DME audit log:** A National Information Exchange Model (NIEM)-compliant list of all import/export activities, including dates and times, type, affected files, and hash functions of affected files.
- 3.2.22 **DME recorder:** May be either a digital video recorder or a network recorder.
- 3.2.23 **Digital recording:** The storage of a stream of information as discrete bits.
- 3.2.24 **Digital sample:** A value or set of values at a point in time and/or space.
- 3.2.25 **Digital video recorder (DVR):** Any device used to encode and record DME.
- 3.2.26 **Display:** Synonymous with *video monitor*.
- 3.2.27 **Download:** The process of receiving data from another digital source.

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- 3.2.28 **Duplicate:** An exact reproduction of the original data validated through a hash function.
- 3.2.29 **Essence:** Sound and/or picture information, not including metadata.
- 3.2.30 **Export:** To copy, duplicate, or move information from within a device or system to a physical or logical location outside that device or system.
- 3.2.31 **External trigger:** Any signal from outside of the system which initiates an action within the system.
- 3.2.32 **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.
- 3.2.33 **First instance recording:** Essence and metadata recorded to the DVR directly from the sensors.
- 3.2.34 **Format:** The specific structure for the data in a file.
- 3.2.35 **Group of pictures (GOP):** A repeated pattern of video frames in a lossy MPEG video stream. A GOP always starts with a reference frame and is followed by a number of independent images.
- 3.2.36 **Hash function:** A mathematical formula that generates a unique number based on the data in a file and is used to verify the data's integrity.
- 3.2.37 **Hard shutdown:** Interruption of all power to the system by a mechanically-operated manual switch as opposed to properly shutting down the system.
- 3.2.38 **Illuminance:** A photometric quantity that expresses the luminous flux (i.e., the light level in lumens per unit area) and is measured in lumens per m<sup>2</sup> (i.e., lux).
- 3.2.39 **Image:** A bit stream duplicate of the original data. An imitation or representation of a person or thing, drawn, painted, photographed, etc. (Taken from SWGDE, SWGIT)
- 3.2.40 **Indication:** A signal to the user providing awareness of system status, errors, or problems.
- 3.2.41 **Indicator:** A visible or audible device on the system used to provide awareness to the user of a state change, status, or condition (e.g., recording).
- 3.2.42 **Industry standard file format:** Format that is viewable and playable without the need for proprietary codecs, players, or viewers available only from the supplier.



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- 3.2.43 **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 DME.
- 3.2.44 **Interlaced video:** A system for compressing video in which each frame shows every other horizontal line of the image. The video signal alternates between showing even and odd lines as the frames are displayed on a monitor.
- 3.2.45 **Interoperable:** Able to be shared among criminal justice agencies in an industry standard file format; specifically referring to uncompressed and compressed DME.
- 3.2.46 **Interoperability:** The ability to be shared among criminal justice agencies in an industry standard file format; specifically refers to uncompressed and compressed DME.
- 3.2.47 **Interview:** A single event for which DME is recorded.
- 3.2.48 **Manufacturer:** A commercial enterprise engaged in fabricating a product.
- 3.2.49 **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 not limited to, locations where the content is stored, dates, times, application-specific information, and permissions.<sup>A</sup> It is data about data.
- 3.2.50 **Model:** The supplier's design, with unique specifications and characteristics, of a particular item.
- 3.2.51 **National information exchange model (NIEM)<sup>1</sup>:** A federal, state, local and tribal interagency initiative providing a foundation for seamless information exchange; an Extensible Markup Language (XML)-based information exchange framework and reference model designed as a core set of building blocks used as a consistent baseline for creating exchange documents and transactions across government.
- 3.2.52 **Network video recorder (NVR):** Software that records DME in digital format to a hard drive or removable storage media.
- 3.2.53 **Pixel:** A picture element.
- 3.2.54 **Pixel sample:** The picture element created by the encoder.
- 3.2.55 **Product:** One unit of a particular model.

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<sup>1</sup> Refer to <http://www.NIEM.gov>.

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- 3.2.56 **Product label:** A marking(s) affixed by a supplier to each unit of a compliant model or to its packaging that contains required model information and the statement of conformity.
- 3.2.57 **Progressive scan:** A system in which the image is displayed by scanning each line of pixels in a sequential order from top to bottom.
- 3.2.58 **Project:** A collection of one or more interviews related to a specific identifier and the associated audit logs.
- 3.2.59 **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.
- 3.2.60 **Record:** Process of writing DME to recording media.
- 3.2.61 **Recording Media:** Any object to which DME is written and from which DME can be retrieved.
- Nonremovable Recording Media: Any data storage housed within a device that cannot be removed from said device without its disassembly.
  - Removable Recording Media: Any portable data storage device designed for removal from a system without disassembly of the system or the storage device.
- 3.2.62 **Reference frame:** A digital video image not dependent on any other images within a GOP for its value. A reference frame is often used as a source for values of other images within a GOP, such as bi-directional and predictive frames.
- 3.2.63 **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*.
- 3.2.64 **Resolution:** Measure of the output quality of an image; capability of distinguishing between two adjacent elements of an image such as lines (referred to as *spatial resolution*) or pixels (referred to as *pixel resolution*).
- 3.2.65 **Sample:** (1) A complete unit to be tested (following conditioning as specified in this standard). A sample is representative of a model.
- 3.2.66 **Shall:** Indicates a mandatory requirement for the purposes of this voluntary standard.
- 3.2.67 **Should:** Indicates a recommendation that is advised, but not required, for the purposes of this voluntary standard
- 3.2.68 **Stream:** Video or audio information sequence transmitted between two devices.

- 3.2.69 **Supplier:** The party that is responsible for ensuring that products meet and, if applicable, continue to meet, the requirements on which the supplier's declaration is based.
- 3.2.70 **System audit log:** A list used to track system events, such as bootup, diagnostic failures, and/or status changes.
- 3.2.71 **System-level components:** Cameras, microphones, digital video recorder, recording media, software, video monitor, and audio monitor that make up the IRRS.
- 3.2.72 **Time/date stamping:** Synonymous with *date/time stamping*.
- 3.2.73 **Transcoding:** The conversion of DME from one data file format to another.
- 3.2.74 **Unique image:** Change occurs from one picture to the next.
- 3.2.75 **Unique pixel sample:** Change occurs at the picture element location from image to image.
- 3.2.76 **Verification:** The process of confirming the accuracy of any duplicate of the DME compared to the original DME.<sup>A</sup> This process normally includes the application of a type of hash function.
- 3.2.77 **Video monitor:** Device for viewing live and recorded video.
- 3.2.78 **WAV:** Waveform audio file format.

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## 4. FORM AND FIT REQUIREMENTS

### 4.1 IRRS Model Requirements

- 4.1.1 IRRS models shall meet or exceed the applicable requirements specified in this section.
- 4.1.2 The system shall consist of at least one color camera, one microphone, a digital video recorder, recording media, software, a video monitor<sup>2</sup>, and an audio monitor. If only one microphone is used, it shall be a stereo microphone.
- 4.1.3 The system may incorporate a second color camera which shall meet the applicable requirements of Section 5.5.
- 4.1.4 The system shall have the capability of recording all DME in digital file format to recording media and electronically exporting all DME (i.e., original DME, compressed DME, and uncompressed DME copy). For any digital file format that is proprietary, the supplier shall provide in the software the capability for an authorized user to redact a copy of the original DME.
- 4.1.5 For systems incorporating encrypted line wired and wireless security, evidence of a certificate of compliance for the validation of encryption algorithms (e.g., FIPS 197 or 46-3) or validation of security requirements for cryptographic modules (e.g., FIPS 140-3) shall be provided.
- 4.1.6 The system shall have an automated verification mechanism for the original DME upon completion of the first instance recording. Using a 256-bit or greater Federal Information Processing Standards (FIPS) 180-2 approved hash algorithm, the resulting hash value shall be attached to the original DME. Evidence of a certificate of compliance for the hash algorithm with FIPS 180-2 shall be provided. The automated mechanism shall not introduce any visible or audible artifacts into the DME.
- 4.1.7 The system shall be capable of allowing a user, at the administrator level and/or the authorized user level, to input specific information required for the DME Audit Log and System Audit Log.

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<sup>2</sup> The video monitor and audio monitor may be combined into a single video/audio monitor.

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## 5. PERFORMANCE REQUIREMENTS

### 5.1 Acceptance Criteria for IRRS Models

5.1.1 IRRS models shall meet or exceed all applicable performance requirements specified in the categories below:

- Safety Requirements (Section 5.2)
- Electrical Requirements (Section 5.3)
- Video, Audio, and Metadata Requirements (Section 5.4)
- Viewing and Intelligibility (Section 5.5)
- System Image Requirements (Section 5.6)
- Security and Access (Section 5.7)
- System Diagnostics (Section 5.8)
- External Trigger (Section 5.9)

5.1.2 No specific test sequence is required; however, it is recommended that safety tests be performed first.

5.1.3 Unless the performance requirement is specifically stated as an average result, failure of any individual specimen result to meet the performance requirement shall constitute failing performance.

### 5.2 Safety Requirements

5.2.1 The system shall meet the fire, electrical, thermal, and mechanical safety requirements of UL 60065 and/or UL 60950-1, as applicable.

### 5.3 Electrical Requirements

5.3.1 The system shall be tested as specified in Section 6.2, *AC Power Test*. The system shall operate on standard 120 VAC power and be resistant to power fluctuations. While operating at power line voltages equal to  $\pm 10\%$  of the nominal value and with variations in frequency  $\pm 5\%$  of the nominal value of 60 Hz, the system shall successfully perform the steps of Section 6.12, *IRRS Demonstration Test*.

### 5.4 Video, Audio, and Metadata Requirements

5.4.1 The system shall be tested as specified in Section 6.3, *Video, Audio, and Metadata Test*, and shall demonstrate the following.

5.4.1.1 The system shall be capable of receiving two separate video streams and two separate audio streams (i.e., left and right channel). Each video stream shall be recorded in the

- first instance as a separate stream, and each audio stream shall be recorded in the first instance as a separate stream.
- 5.4.1.2 The video stream(s), audio stream(s), and the associated metadata (e.g., room temperature, polygraph input, date and time) shall remain synchronized to an accuracy of 33 ms throughout the duration of the recording. All metadata shall be encoded at least once every 33 ms and shall not overwrite video image information.
  - 5.4.1.3 Each camera shall have a minimum of 452 horizontal lines of resolution and provide an accurate color image.
  - 5.4.1.4 The system shall have minimum sample rate of 640 x 480 pixels per image whereby a minimum of 480 lines are sampled 640 times each.
  - 5.4.1.5 The system shall be able to record in stereo consisting of two channels of audio, line level with a minimum of 16-bit, and a minimum sampling rate of 11 kHz producing an uncompressed linear pulse-code modulation (LPCM) wav file. The system shall have the capability of recording a frequency response of at least 100 Hz through 5 kHz.
  - 5.4.1.6 The system shall have capability of displaying separate synchronized video streams from each of the system cameras simultaneously.
  - 5.4.1.7 The system shall be capable of first instance recording at a minimum frame rate of 29.97 unique images per second per camera with no dropped frames. Temporal compressed (i.e., MPEG) systems shall not produce a GOP that exceeds 15 frames.
  - 5.4.1.8 The system shall demonstrate the capability of synchronizing with a reliable, external time/date source.
  - 5.4.1.9 The system shall demonstrate continual recording of the time/date stamp as metadata.
  - 5.4.1.10 The system shall demonstrate the capability of having its display color changed to make it distinguishable from the background, of having user-definable positioning within the displayed image, of having user-definable font size, and of being turned off within the displayed image.
  - 5.4.1.11 The system shall provide capability for a user to monitor all audio, video, and internally generated metadata.
  - 5.4.1.12 The system shall be capable of first instance recording, without user intervention, of at least a continuous 12-hour event. Uncompressed DME copy, compressed DME, and any duplicate shall maintain the required video frame rate, audio, metadata, and synchronization for the duration of the recorded event.

5.4.1.13 The system shall automatically produce and record metadata within the DME, associated with but separate from the video stream(s), including the following information:

- Time and date stamp.
- Interview room identifier.
- Alarm indications, such as start, stop, video loss, and audio loss.
- Auxiliary data inputs (e.g., USB port for inputting data), such as temperature readings in the room, or polygraph.
- User inputs.
- Audit logs.

The display of such information must be administrator-configurable to allow or disallow visual display.

5.4.1.14 The system shall record video in a progressive scan format (i.e., not interlaced) to prevent interlace artifacts during motion.

5.4.1.15 The system shall demonstrate color fidelity in that the red-green-blue (RGB) values shall not be shifted off axis by more than 5%.

5.4.1.16 The system shall provide the following data output capabilities:

- Capability to produce an uncompressed DME copy (i.e., no further compression) in material exchange format (MXF) (i.e., interoperable copy). Each recorded stream shall be a separate stream in the resulting MXF file.
- Capability to export a duplicate in the original file format for disclosure/discovery and other uses.
- Capability to export a compressed copy for convenient disclosure file sharing (i.e., interoperable copy). The system shall be capable of recognizing the type of output so that the production of an interoperable copy does not trigger the system to indicate that a duplicate has been produced.
- Capability to export all DME to removable recording media.
- Capability to export an audio file in an industry standard file format without further compression that is accurate with respect to time for transcription

purposes. The exported audio file shall be exactly the same as the first instance recording.

5.4.1.17 The system shall demonstrate the following user inputs:

- Start and stop recording.
- A trigger to initiate recording remotely.
- Manual data entry by a user at any time (set up of metadata).
- Searchable notes field into which a user can input notes.
- Flags for video that should not be overwritten from system storage without that user's authorization. The system should indicate to the user that data has been transferred to another storage device (with verification).
- The system shall provide at least the controls, displays, and indicators or external triggers listed in Table 5.

5.4.2 The system shall demonstrate the capability of generating or being assigned a unique IP address in order to link to a network.

5.4.3 The system shall provide a System Audit Log including system-level events, software updates, hardware changes, and a copy of the metadata. The system shall demonstrate the capability to poll all system-level components and automatically record into the System Audit Log system-level details and events, including the following, at least each time status changes:

- Time and date of event.
- Recording device identification, including manufacturer and model number.
- Hardware identification, including manufacturer and model number.
- Software version.
- Firmware version.
- IP Address.
- Administrator identification.
- System status change (e.g., boot up, power on, IP address change).



- System-level component status change indicators (e.g., storage media full, camera failure, component ready).
- Identification of all audio, video, and data sources.

5.4.4 The system shall provide a DME Audit Log, including at least the following available fields:

- User-entered details on specific cases (e.g., user name, case number, subject's name, names of people in room, when interviews started/stopped) and logging in/out. Key information includes identification of all individuals present in the room, identification of subject(s), type of offense, security level (who has access), incident/case number, and verification of date/time.
- Identification of the administrator who marks the beginning/end of an event to allow overwrite on the storage device of information that has no value.
- Identification of user and/or system accessing the DME.
- Identification of user performing DME duplication.
- Time and date of any DME duplication.
- Hash function or other industry standard verification shall be computed for the exported DME using an industry-standard method and shall be defined and provided with the exported DME.
- The calculated hash function of the exported DME should be recorded as part of the audit log, as well as the hash function of the original file.

5.4.5 Identification of the source of the DME, including the interview room identification and associated metadata.

## 5.5 Viewing and Intelligibility Requirements

5.5.1 The system shall be tested as specified in Section 6.4, *Viewing and Intelligibility Test*, and shall demonstrate the following viewing capabilities:

5.5.1.1 Subject view: The system shall provide a view on playback of the video such that the head of the subject target is covered by at least 68 horizontal lines of resolution.<sup>3</sup>

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<sup>3</sup> Consistent with SWGIT guidance of 15

5.5.1.2 Room view: The system shall provide a view on playback of the video showing any portion of both center lines (horizontal and vertical) on 5 out of 8 room targets in the test room.

5.5.2 The system shall be tested for intelligibility, and the average from the three observers for each test subject shall be at least 55 out of 60 words correctly documented.

**Table 5. Controls, Indicators, and Displays**

<b>Controls</b>	<b>Indicator (I) or Displayed Information (D)</b>
Power On	Power On (I) System audit log, including diagnostics (D) Media not inserted or not operational (if removable media) (D)
Power Off	None
Record	Microphone On (I or D) Recording of audio (I and D) Recording of video (I and D) Time Remaining (D) Low record time remaining at ≤one hour remaining (I)
Play	Playing (D)
Fast Forward	Fast Forwarding (D)
Rewind	Rewinding (D)
Pause	Paused (D)
Stop	Stop (I)
Audio Monitor Volume	Volume (D)
Display Brightness	None

## 5.6 System Image Requirements

5.6.1 The system shall demonstrate the following system image requirements when tested as specified below.

- The system shall be tested as specified in Section 6.5, *Spatial Resolution Test*, and shall have a minimum of 452 horizontal lines of resolution.
- The system shall be tested as specified in Section 6.6, *Aspect Ratio Test*, and shall have an aspect ratio that is  $1:1 \pm 2\%$ .

## 5.7 Security and Access Requirements

5.7.1 The system shall be tested as specified in Section 6.7, *Security and Access Test*, and shall demonstrate the capability of assigning and managing permissions for levels of authorized access and control (e.g., system administrator level, alert list administrator level, authorized user level).

5.7.1.1 The system shall demonstrate the capability for a system administrator to perform the following:

- Change system configuration.
- Assign authorized user rights to groups or to individuals.
- Manage audit log information.

5.7.2 The system shall demonstrate that the original DME cannot be altered or destroyed at any access level.

## 5.8 System Diagnostic Requirements

5.8.1 The system shall be tested as specified in Section 6.8, *System Diagnostic Test*, and shall perform a diagnostic to detect any malfunction (i.e., dropped frames; loss of time/date stamp, video, audio, or any external references, if any, normally recorded by the system) or loss of functionality of the recorder, camera, displays and microphones. The diagnostic shall be performed on system startup and at least every 60 seconds, and any malfunction or loss of functionality shall be documented in the System Audit Log.

## 5.9 External Trigger Requirement

5.9.1 The system shall be tested as specified in Section 6.9, *External Trigger Test*, and shall demonstrate the capability of accepting external triggers (e.g., open/closed alarms).

**6. Test Methods**

6.1 General

- 6.1.1 Performance requirement pass/fail criteria shall be as stated in Chapter 5, Performance Requirements.
- 6.1.2 Unless the performance requirement is specifically stated as an average result, failure of any individual specimen result to meet the performance requirement shall constitute failing performance.
- 6.1.3 Unless the context unmistakably indicates otherwise, the duration specified in this chapter for any procedure (e.g., “500 hours”) shall be understood to run consecutively (e.g., “500 consecutive hours”).
- 6.1.4 Unless the context unmistakably indicates otherwise, an indication that an action is to “follow” something else, or otherwise is to occur after something else, should be understood to mean that the subsequent action should occur immediately after the preceding event.
- 6.1.5 All samples and facsimile samples for testing shall be provided by the supplier.

**6.2 AC Power Test**

- 6.2.1 Connect the system to an AC power source at the highest rated supply voltage plus 10% at nominal frequency and switch the system on. Perform the IRRS Demonstration Test as specified in Section 6.10. Switch the system off and disconnect from the AC power source. Record observations and results.
- 6.2.2 Connect the system to an AC power source at the lowest rated supply voltage minus 10% at nominal frequency and switch on the system. Perform the *IRRS Demonstration Test* as specified in Section 6.10. Switch the system off and disconnect from the AC power source. Record observations and results.
- 6.2.3 Connect the system to an AC power source at nominal voltage at 5% less than the lowest rated supply frequency and switch the system on. Perform the *IRRS Demonstration Test* as specified in Section 6.10. Switch the system off and disconnect from the AC power source. Record observations and results.
- 6.2.4 Connect the system to an AC power source at nominal voltage at 5% greater than the highest rated supply frequency and switch the system on. Perform the *IRRS Demonstration Test* as specified in Section 6.10. Switch the system off and disconnect from the AC power source. Record observations and results.

## 6.3 Video, Audio, and Metadata Test

### 6.3.1 Purpose of test

- Assess video and audio streams and their synchronization.
- Test synchronization of IRRS signals.
- Assess audio and frequency response.
- Assess minimum event recording duration.
- Assess first instance recording.
- Assess synchronization of internal date/time.
- Assess minimum frame rate and no dropped frames.
- Assess minimum sample rate.
- Assess whether all video, audio, and metadata can be monitored.
- Assess whether the system under test can capture colors accurately so that color can be reliably used to track activity of objects and persons during analyses of recorded video.

### 6.3.2 Test Equipment and Room Details

- Test Target: DSC Labs Model Chroma DuMonde 12R or equivalent.
- 12” or larger oscillating fan with visible moving blades (to force continuous updating of the image and to test for artifacts caused by motion and interlacing).
- Light source: 500 to 2,000 lux and at a color correlated temperature of 2,800 to 3,200 K.
- Audio source: Greenwich Mean Time (GMT) Speaking Clock.
- External Society of Motion Picture and Television Engineers (SMPTE) time code generator.
- Non-linear editor that is fully qualified by the manufacturer of the editing software and capable of reading and playing back uncompressed media.
- Industry standard analytic tools, such as Quicktime, GSpot Codec Information Appliance, FTK Imager, Virtual Dub, VLC Player.
- Digital vectorscope, such as a Tektronix.

### 6.3.3 Duration of Test

6.3.3.1 The duration of the test shall be at least 12 hours.

### 6.3.4 Initial Conditions

6.3.4.1 The system shall have an empty DME storage device prior to the beginning of this test.

### 6.3.5 Procedure

6.3.5.1 Connect the IRRS such that the video signal(s) are in line with the external SMPTE time code generator. If the IRRS camera is an IP camera, use an IP-analog adapter to accomplish this step.

6.3.5.2 Affix the camera(s) to a stable mount.

6.3.5.3 Power up the IRRS and other test equipment, and verify proper operation of the IRRS.

6.3.5.4 Position the oscillating fan so that it is visible to all IRRS cameras and fills 20% of at least one IRRS camera's view. Position the fan so that its airflow is not directed toward the IRRS microphone(s), and turn the fan on low speed in oscillating mode.

6.3.5.5 Place the audio source approximately 3 feet from the microphone(s). If microphone(s) is directional, it shall be aimed directly at the audio source. If two microphones are used, place the microphones approximately 12 inches from each other.

6.3.5.6 Initiate recording of DME from the IRRS and record for a duration of at least 12 hours. Monitor the all video and audio sources periodically during the procedure.

6.3.5.7 Between 5 and 6 hours into the recording and while continuing to record, position the test target relative to the camera such that the target is in the center with all edges in view and so that the target encompasses approximately 75% of the horizontal samples of the field of view. Illuminate the test target with the light source. Leave the test target in position for at least one minute, and then remove the test target from the camera's view.

6.3.5.8 Allow the system to continue recording for the remainder of the 12 hour period.

6.3.5.9 Stop recording.

6.3.5.10 Playback the original DME and verify that it contains video, audio, time/date stamp, and associated metadata.

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- 6.3.5.11 Export and acquire all DME according to the supplier's procedure and verify that the uncompressed DME copy, compressed DME, and original DME were acquired. Any necessary proprietary software shall also be exported to allow viewing of metadata. All subsequent steps of this procedure shall be performed on an independent device.
- 6.3.5.12 Using original DME or uncompressed DME copy, apply industry standard video analytic tools to document the frame rate, audio sample rate, metadata, and video resolution.
- 6.3.5.13 Input the uncompressed DME copy and compressed DME into the non-linear editor, ensuring that original frame rate and audio project settings are maintained. Check both DME types to see if external time code matches time stamp on the recording. Check 6 times at a minimum of 90-minute intervals over the 12-hour period. Observe whether or not the video and audio signals remain synchronized to within 33 ms of each other. Observe whether or not the time stamp display is accurate to a minimum of 33 ms.
- 6.3.5.14 Review the audit logs and verify that all required elements as shown in Appendix B are present in the XML file and represent the content of the event.
- 6.3.5.15 Locate the section of the uncompressed DME copy of the color test target, and input the file into the digital vectorscope. The RGB values shall not be shifted off axis by more than 5%. Each trial result and observations shall be documented and reported.
- 6.3.5.16 Observations regarding functioning per supplier specifications shall be documented and reported.

#### 6.4 Viewing and Intelligibility Test

##### 6.4.1 Purpose

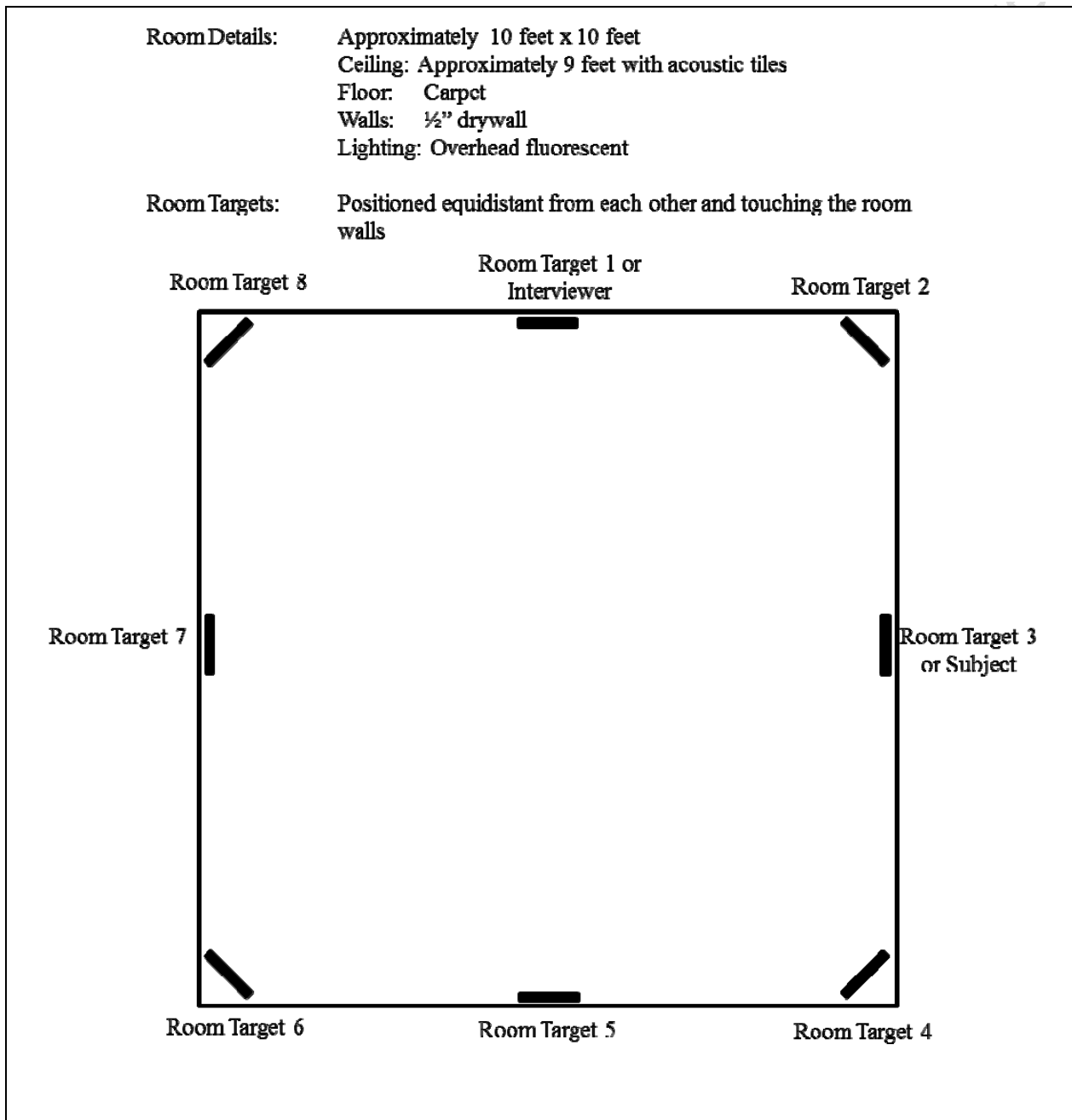
- 6.4.1.1 The purpose of this test is to assess the system's capability to obtain (1) a close view of a subject's face, (2) a wide view of the majority of the interview room, and (3) intelligible audio from the system.

##### 6.4.2 Test Equipment and Room Details

- Room Target(s): Life size printed image of human silhouette with dimensions of approximately 26 inches wide and approximately 70 inches tall and horizontal and vertical centerlines. (A printable image will be added to the standard)
- Subject Target: Upper half of the life size printed image from the horizontal center line with an 8 inch diameter circle as the head. The subject target shall be rigid and placed on a chair to simulate a seated person.

- Chairs: Rigid, non-adjustable chair, having a back and a flat, rigid seat, and resting on flat surface.
- Test Room: 10 ft. by 10 ft. square room with an 8 ft. ceiling (see Figure 1 for specifications).

Figure 1. IRRS Test Room Layout





### 6.4.3 Test Personnel

- 6.4.3.1 One individual (male or female) shall act as an interviewer and be seated in a chair positioned in place of Room Target 1 for the microphone portion of this test.
- 6.4.3.2 One individual (opposite gender as above) shall act as the subject being interviewed and be positioned in place of the subject target on the chair.
- 6.4.3.3 Three individuals are required as observers to listen to the recorded audio as it is played back. Each observer shall demonstrate the ability to hear frequencies from at least 2 kHz to 5 kHz.

### 6.4.4 Initial Conditions

- 6.4.4.1 The system shall have an empty DME storage device prior to the beginning of this test.

### 6.4.5 View Procedure

- 6.4.5.1 The test room shall be configured with room targets positioned as indicated in Figure 1. The room targets positioned near a single wall shall be parallel to and touching the nearest wall. The room targets positioned in corners shall be touching both walls equally. The supplier shall specify the placement of the IRRS camera(s) in the test room to achieve the required room view.
- 6.4.5.2 The subject target shall be positioned horizontally 8 ft.  $\pm$  1 inch from the camera indicated by the supplier as the 'subject view' camera. The top edge of the subject target shall be positioned 54 inches  $\pm$  1 inch from the floor.
- 6.4.5.3 Connect the IRRS, and power up the IRRS and other test equipment, and verify proper operation of the IRRS.
- 6.4.5.4 Initiate recording of DME from the IRRS and record at least one minute of DME.
- 6.4.5.5 Playback the compressed DME, the original DME, and the uncompressed DME copy and document the results for subject view and room view for each type of DME.
- 6.4.5.6 Observations shall be documented and reported.

### 6.4.6 Microphone Procedure

- 6.4.6.1 The background noise level at the location of the test subject shall be measured and documented.

- 
- 6.4.6.2 Each test subject shall speak individually to each observer face-to-face in the test room to ensure that the observers are able to understand the speech and accent of the test subjects. Each observer shall indicate whether or not he/she understands each test subject. The remainder of the procedure shall not be performed until all observers demonstrate the ability to understand the test subjects.
- 6.4.6.3 The interviewer shall sit in a chair at the location of room target 1, and the test subject shall replace the subject target seated on the chair.
- 6.4.6.4 A phrase set shall be selected from Appendix A. The test subjects shall read the selected phrase set. Each speaker shall speak slowly, enunciating each phrase clearly and distinctly and shall pause for approximately 5 seconds between phrases. The speaker output levels shall be monitored while speaking.
- 6.4.6.5 When the above steps are completed, recording shall be stopped.
- 6.4.6.6 Three observers shall independently don the headphones and listen to a playback of the recorded audio and document the words that are heard.
- 6.4.6.7 The appropriate steps of this procedure shall be performed for each and every system microphone.
- 1.2.1 Report
- 6.4.6.8 Each observer's results shall be documented and reported.
- 6.4.6.9 The average of the three observer results for each phrase set shall be documented and reported.
- 6.4.6.10 The sound pressure measurements shall be documented
- 6.4.6.11 Observations shall be documented and reported.

## 6.5 Spatial Resolution Test

### 6.5.1 Purpose

- 6.5.1.1 The purpose of this test is to determine if the system is able to capture images of small items of importance in the typical scenes likely to be encountered in practice.

## 6.5.2 Initial Conditions

6.5.2.1 The system shall have an empty DME storage device prior to the beginning of this test. The nominal operating power, as described in the system manual, shall be applied to the system.

## 6.5.3 Test Equipment

- Test Target: DSC Labs Chroma DuMonde 12R or equivalent.
- Light source: An illumination source of 500 to 2,000 lux and at a color correlated temperature of 2,800 to 3,200 K.

## 6.5.4 Procedure

6.5.4.1 Connect the IRRS per supplier instructions.

6.5.4.2 Power up the IRRS and other test equipment.

6.5.4.3 Affix the camera(s) to a stable mount and verify proper operation by viewing an image on the video display of the scene being captured.

6.5.4.4 Position the test target relative to the camera such that the target is in the center with all edges in view and so that the target encompasses approximately 75% of the horizontal samples of the field of view.

6.5.4.5 The test target shall be illuminated by the light source.

6.5.4.6 Record DME for at least one minute.

6.5.4.7 Take a frame from each type of DME output by the system. Open each image in Photoshop or an equivalent software package.

## 6.5.5 Report

6.5.5.1 Each trial result shall be documented and reported.

## 6.6 Aspect Ratio Test

### 6.6.1 Purpose

6.6.1.1 The purpose of this test is to determine if the system presents images to the user that have the correct aspect ratio (i.e., width to height) so that valid measurements can be made from recorded video.

## 6.6.2 Initial Conditions

6.6.2.1 The system shall have an empty DME storage device prior to the beginning of this test. The nominal operating power, as described in the system manual, shall be applied.

## 6.6.3 Test Equipment

- Test target: 3- to 10-inch diameter sphere having a smooth surface, of solid dark color, such as black.
- Light source: An illumination source of 500 to 2,000 lux and at a color correlated temperature of 2,800 to 3,200 K.

## 6.6.4 Procedure

6.6.4.1 Connect the IRRS per supplier instructions.

6.6.4.2 Power up the IRRS and other test equipment.

6.6.4.3 Affix the camera(s) to a stable mount and verify proper operation by viewing an image on the video display of the scene being captured.

6.6.4.4 Suspend the sphere in front of a background having contrasting color from the sphere that allows the sphere to be distinguished from the background. The sphere shall be positioned relative to the camera such that the sphere is in the center with all edges of the sphere in view and so that the sphere encompasses approximately 75% of the horizontal samples of the field of view.

6.6.4.5 The test target shall be illuminated by the light source.

6.6.4.6 Record DME for at least one minute.

6.6.4.7 Take a frame from each type of DME output by the system. Open each image in Photoshop or an equivalent software package.

## 6.6.5 Report

6.6.5.1 Each trial result and observations shall be documented and reported.

## 6.7 Security and Access Test

### 6.7.1 Purpose

6.7.1.1 The purpose of this test method is to demonstrate the following allowed or restricted access:

- Administrator access level: modify time/date stamp change, modify audit logs, change system configuration, delete original DME, overwrite DME for unintentional or irrelevant recording.
- Authorized user level does not have the above described access.

## 6.7.2 Initial Conditions

- 6.7.2.1 The system shall have an empty DME storage device prior to the beginning of this test. The nominal operating power, as described in the system manual, shall be applied to the system, and the system shall be turned on.
- 6.7.2.2 The supplier shall provide a list of available system functions configurable at the administrator access level. A representative subset of those system functions shall be selected by the test laboratory for evaluation.
- 6.7.2.3 Affix the camera(s) to a stable mount. Power up the IRRS and other test equipment.
- 6.7.2.4 Position the test target so that the target fills the camera's view.
- 6.7.2.5 Verify proper operation of the IRRS by viewing an image on the video display of the scene being captured.
- 6.7.2.6 Attempt to configure system functions at the administrator access level, and assess whether those system functions can be configured at the administrator access level. Attempt to configure those same system functions at the authorized user access level, and assess whether those system functions can be configured at the authorized user access level.
- 6.7.2.7 Assign permission for the same subset of system functions to the authorized user access level, and assess whether those permissions are successfully assigned and configurable at the authorized user access level.
- 6.7.2.8 For a different subset of system functions other than those for which permissions were assigned above, attempt to configure those system functions at the authorized user access level, and assess whether those system functions are configurable at the authorized user access level.
- 6.7.2.9 Attempt to erase, modify, or overwrite previously recorded original DME at the administrator access level and the authorized user access level.

## 6.7.3 Report

- 6.7.3.1 Each trial result and observations shall be documented and reported.

## 6.8 Diagnostic Test

### 6.8.1 Test Equipment

6.8.1.1 To be added

### 6.8.2 Procedure

6.8.2.1 Affix the camera(s) to a stable mount. Power up the IRRS and other test equipment.

6.8.2.2 Position the test target so that the target fills the camera's view.

6.8.2.3 Verify proper operation of the IRRS by viewing an image on the video display of the scene being captured.

6.8.2.4 Initiate recording and sequentially introduce the following malfunctions to the system: loss of an external reference and loss of functionality of the recorder, camera(s), displays, and microphone(s). The system shall indicate any malfunction within 60 seconds of diagnostic completion.

6.8.2.5 Download the System Audit Log, and verify that the diagnostic check is documented as being performed upon system startup, at least every 60 seconds, and for every simulated malfunction listed above.

### 6.8.3 Report

6.8.3.1 Each trial result and observations shall be documented and reported.

## 6.9 External Trigger Test

### 6.9.1 Purpose

6.9.1.1 The purpose of this test is to assess the system's capability to receive and appropriately respond to external triggers.

### 6.9.2 Test Equipment

- Test Target: DSC Labs Chroma DuMonde 12R or equivalent.
- Light source: 500 to 2,000 lux and at a color correlated temperature of 2,800 to 3,200 K.

### 6.9.3 Procedure

6.9.3.1 Affix the camera(s) to a stable mount. Power up the IRRS and other test equipment.

6.9.3.2 Position the test target so that the target fills the camera's view.

- 
- 6.9.3.3 Verify proper operation of the IRRS by viewing an image on the video display of the scene being captured.
- 6.9.3.4 The test target shall be illuminated by the light source.
- 6.9.3.5 Each type of external trigger input shall be tested. A representative external trigger shall be connected to the system per supplier instructions for each input (e.g., motion detector, proximity card, other switch).
- 6.9.3.6 Engage the external trigger, and observe the system response.
- 6.9.3.7 Repeat the previous step until each external trigger has been engaged.
- 6.9.4 All observations and results shall be documented and reported.

## 6.10 IRRS Demonstration Test

### 6.10.1 Purpose

- 6.10.1.1 The purpose of this test is to assess the system basic functionality.

### 6.10.2 Test Equipment

- Test Target: DSC Labs Chroma DuMonde 12R or equivalent.
- Light source: 500 to 2,000 lux and at a color correlated temperature of 2,800 to 3,200 K.

### 6.10.3 Procedure

- 6.10.3.1 Affix the camera(s) to a stable mount. Power up the IRRS and other test equipment.
- 6.10.3.2 Verify proper operation of the IRRS by viewing an image on the video display of the scene being captured.
- 6.10.3.3 Initiate recording of DME and have a person step in front of the camera and say the date and audibly count for at least one minute.

- 6.10.3.4 Record DME for at least one minute.
- 6.10.3.5 Stop recording.
- 6.10.3.6 Playback the original DME and verify that it contains video, audio, time/date stamp, and associated metadata.
- 6.10.3.7 Export and acquire all DME according to the supplier's procedure and verify that the uncompressed DME copy, compressed DME, and original DME were acquired.
- 6.10.4 All observations and results shall be documented and reported.

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## **7. Labeling and Information**

### **7.1 General Product Label Requirements for IRRS Models**

- 7.1.1 For each compliant IRRS model, the requirements of this section shall be met.
- 7.1.2 The system shall have a product label permanently and visibly attached to, stamped on or printed on the main housing of the recording unit of the system.
- 7.1.3 All text on the required product label shall be at least in English.
- 7.1.4 Symbols and other graphical information shall be permitted to be used to supplement text on the product label(s) and shall be explained in the user information.
- 7.1.5 The housing of the recording unit of the system shall have at least the following information printed legibly on the label(s) in letters at least 3.2 mm (1/8 inch) high:
  - Legal name and legal address of the supplier.
  - Manufacturing location address (city, state/province, country).
  - Date of manufacture (i.e., month and year).
  - IRRS model number.
  - Serial number.

### **7.2 Statement of Conformity for Each Compliant Product**

- 7.2.1 A compliant product shall have the following statement of conformity in letters at least 2.5 mm (3/32 inch) high.
- 7.2.2 The statement shall be included with the user information required in Section 7.3.

“PURSUANT TO NIJ CR-100x.00, THIS IRRS MODEL HAS BEEN TESTED AND FOUND TO BE COMPLIANT WITH THE REQUIREMENTS OF NIJ STANDARD-100x.00 (CRIMINAL JUSTICE IRRS STANDARD).”

### **7.3 User Information to Be Provided by Supplier of IRRS Model**

- 7.3.1 In order for a supplier to have an IRRS model tested under this standard, the supplier must agree that, if the model is found to be compliant, it will provide written user information including, but not limited to, warnings, information and instructions with each complete system (and with each system-level component that may be acquired or provided separately).

- 7.3.2 The supplier shall provide the required user information in such a manner as to make such information clear, prominent, and immediately available to any individual opening the package.
- 7.3.3 The supplier shall provide at least the following instructions and information with each system:
- Information from Sections 4.1.5 and 4.1.6.
  - System-level components tested with the system. System-level components shall be identified by model number with allowable substitutions (including model numbers and specifications).
  - Instructions for proper installation and use as intended by the supplier, including safety considerations and user-definable settings.
  - Specifications and ratings for in-wall and/or in-ceiling cabling between components.
  - Warranty information.
  - Proper care and maintenance instructions, including cleaning, inspection guidelines and frequency, recommended operating temperature range, recommended storage practices and storage life, and cautions.
  - If any of the system-level components are not dedicated exclusively to supporting system functionality, it shall be noted that system ability to share resources is not addressed under the scope of this standard. It is recommended that a risk analysis be conducted by the end user to ensure that the system is interoperable with other equipment.
  - Guidelines on lifecycle and storage of removable media, if applicable.
  - Types of external triggers that the system will accept.
  - Listing of available system functions configurable at the administrator access level.
- 7.4 Technical Documentation to Be Provided by Supplier
- 7.4.1 In order for a supplier to have an IRRS model tested under this standard, the supplier must agree that, if the model is found to be compliant, it will provide technical documentation as set forth in this section for the system on request by the purchaser or prospective purchaser.
- 7.4.2 The technical data package shall contain all data showing compliance of the model with this standard.

- 7.4.3 The technical documentation shall include the supplier name, model number, supplier-replaceable system-level components, and available options and accessories. Frequency response of microphone shall also be specified.
- 7.4.4 The technical documentation shall address accessories available for use with the system.

*Draft - Content subject to change*

**Appendix A: Phrases for Microphone Procedure**

Phrase Set 1: (60 words)

<b>Interviewer</b>	<b>Subject</b>
Can you provide your full name?	Lillian Harsey
What is your birth date?	Seven twenty-four sixty nine
Who is somebody that always knows how to get in contact with you?	Erwin Fletcher
Can you understand the English language?	I have some trouble reading English.
Do you mind if we search your house?	Why would you want to search my house?

Phrase Set 2: (60 words)

<b>Interviewer</b>	<b>Subject</b>
Do you know why you're here?	Yes, because of the robbery.
Can you account for your activities last night?	I was at home.
Do you know the person in this photo?	No, I've never seen him before.
What did you do with the gun?	I didn't have any gun.
What kind of car do you own?	A Lincoln town car.

Phrase Set 3: (60 words)

<b>Interviewer</b>	<b>Subject</b>
Would you like a glass of water?	No, I would like a soda with no ice.
Do you need anything to eat?	Yes, I want a cheeseburger and fries.
Where do you currently work?	I am in the insulation business.
Where do you live?	4200 Cypress Street, Apartment two D
Are you currently on parole?	Yes, I am on probation.

**Appendix B. NIEM-based Field Mapping**

Data Element	Description	Niem Schema Mapping	Inherits/Instantiates	Notes
<b>DME AUDIT LOG</b>				
Activity Type	Export or Import	j:activitytype	nc:activitytype	
Date/Time of export	Date/Time of export	nc:DateTime	niem-xsd:dateTime	
Affected File	File being sent	nc:documentfilename		
File Hash	Hash function Value for sent file	scr:ImageHashValue	scr:ScreeningDocumentPhotoAugmentationType	
Compressed File Hash function	Hash function Value after compressed	scr:ImageHashValue	scr:ScreeningDocumentPhotoAugmentationType	
Source DME id	Vehicle Id, CPU, Hardware Id	cbrn:DataFileSubjectCode	cbrn:DataFileType	
Storage Transfer Submitter NAME	Name of Submitter	nc:PersonName	nc:documentSubmitter nc:entitytype nc:PersonType	Need the Name or the Badge or the ID number of the sender
Storage Transfer Submitter Badge Number	BadgeNumber of Submitter	nc:EmployeeBadgeNumber	nc:documentSubmitter nc:entitytype nc:PersonType scr:PersonEmploymentAssociationAugmentationType	Need the Name or the Badge or the ID number of the sender
Storage Transfer Submitter Employee Number	EmpNumber of Submitter	nc:EmployeeNumber	nc:documentSubmitter nc:entitytype nc:PersonType scr:PersonEmploymentAssociationAugmentationType	Need the Name or the Badge or the ID number of the sender
Person/System Receiving	name of person/system receiving file	nc:DocumentRecipient	nc:EntityType	
<b>SYSTEM AUDIT LOG</b>				
Date/Time	Date/Time of event	nc:DateTime	niem-xsd:dateTime	
Equipment	Equipment reporting event	it:EquipmentIdentifier	niem-xsd:string	
IPAddress	IP Address	it:IPAddress	niem-xsd:string	Provides the IP Address of the system
AuditMessage	Message	em:AlarmdetailsText	em:AlarmType	
AlarmEvent	Cause of Event	em:AlertEventDetailsSeverityCode	em:AlertEventDetailsType	
Verification Results	Verification Check of	cbrn:CredentialsAuthenticatedCode	cbrn:AcknowledgementDataTypes	