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Description automatically generated ISO/IEC JTC 1/SC 29/WG 2 N0080

**ISO/IEC JTC 1/SC 29/WG 2  
MPEG Technical requirements   
Convenorship: SFS (Finland)**

**Document type:** Output Document

**Title:** Common Test Conditions and Evaluation Methodology for Video Coding for Machines

**Status:** Approved

**Date of document:** 2021-04-30

**Source:** ISO/IEC JTC 1/SC 29/WG 2

# Expected action: None

# Action due date: None

**No. of pages:** 3 (with cover page)

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**Committee URL:** [https://sd.iso.org/documents/ui/#!/browse/iso/iso-iec-jtc-1/iso-iec-jtc-1-sc-29/iso-iec-jtc-1-sc-29-wg-2](https://sd.iso.org/documents/ui/" \l "!/browse/iso/iso-iec-jtc-1/iso-iec-jtc-1-sc-29/iso-iec-jtc-1-sc-29-wg-2)

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**ISO/IEC JTC 1/SC 29/WG 2**

**MPEG TECHNICAL REQUIREMENTS**

**ISO/IEC JTC 1/SC 29/WG 2 N0080**

**Online – April 2021**

**Title: Common Test Conditions and Evaluation Methodology for Video Coding for Machines**

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**Status: Approved**

**Serial number: 20410**

# Abstract

In this document, the evaluation methodology and reporting template for VCM [1] is updated based on the decisions made in this meeting.

# Introduction

During the VCM AhG meeting, it was decided to adopt two datasets for object detection:

* TVD image dataset [2]
* SFU-HW-Objects-v1 video dataset [3]

In addition, new anchors for object detection and object segmentation using OpenImageV6 dataset are provided in [4]. The uncompressed MAP value for FLIR dataset is fixed in [5]. New anchor results for FLIR dataset using 10-bit process is adopted to replace the existing ones [6]. Thus the common test condition and corresponding reporting template in [1] need modifications. The evaluation methodology remain unchanged.

# Common Test Conditions

Five machine tasks will be evaluated with a set of datasets, shown as following:

|  |  |
| --- | --- |
| Machine Task | Evaluation Dataset |
| Object detection | OpenImageV6  FLIR (IR dataset)  TVD (image dataset)  SFU-HW-Objects-v1 video dataset |
| Instance segmentation | OpenImageV6 |
| Object tracking | HiEve-10 |
| Pose Estimation | HiEve-10 |
| Action Recognition | HiEve-10 |

# Evaluation Methodology

BD-rate, BD-mAP, BD-fmAP, or BD-MOTA are used to evaluate the proposed solution against the anchor. They are computed using the RD curve from the anchor and the RD curve from the proposed solution. Here a RD curve can be either a mAP vs BPP curves, a fmAP vs. bitrate, or a MOTA vs. bitrate curve, or a per-sequence mAP vs kbps curve, depending on machine tasks.

# Reporting Template

The template in [1] is updated by adding object detection results for TVD image dataset [2] and SFU-HW-Objects-v1 video dataset [3]. Note that the results for SFU-HW-Objects-v1 video dataset is put into a separate Excel sheet named as “Video\_Object\_Detection” since it includes per video sequence results, which are different from the other image-based datasets for object detection. The results for object detection and object segmentation using OpenImageV6 are replaced with those in [4]. The uncompressed mAP value for the FLIR dataset is fixed with the value in [5], i.e., 40.557. In addition, the existing FLIR anchor results are replaced with the ones using 10-bit process in [6]. The RD curve, Pareto front points for the two newly added datasets have been added to the template. The summary page is modified as well to reflect the changes above.

# Conclusions

We recommend the VCM group to adopt the updated reporting template in this document.

# References

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