

1653 East Main Street
 Rochester, NY 14609 USA
 Voice: 585.482.0300
 FAX: 585.288.5989
 imaging@appliedimage.com

AI-CCS-UPC/EAN-
 Enhanced
 Conformance
 Calibration Standard
 Product Specifications



Catalog Part No: **AI-CCS-UPC/EAN-Enhanced**

Product Name: **Conformance Calibration Standard Enhanced Test Card**

Drawing / Photo of Part:

**CONFORMANCE CALIBRATION STANDARD
 ENHANCED TEST CARD
 FOR UPC/EAN SYMBOL VERIFIERS
 USING 6 MIL APERTURES**

EAN-13 MASTER GRADE

UPC-A MASTER GRADE



DECODABILITY: _____ %
 CONTRAST: _____ %
 MODULATION: _____ %
 RMAX: _____ %

DECODABILITY: _____ %
 CONTRAST: _____ %
 MODULATION: _____ %
 RMAX: _____ %



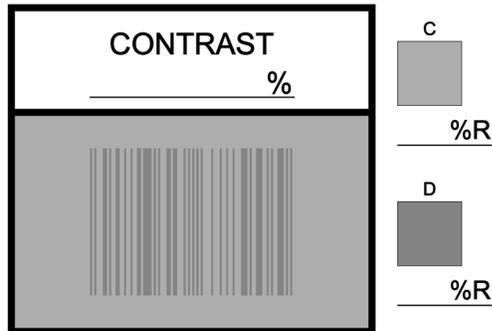
CALIBRATION #: _____
 WAVE LENGTH: **660 nm**
 EFF. APER: **0.006 in.**



• PER ISO/IEC 15416
 STANDARDS

ACCUEGE Technology
 NIST TRACEABLE - JUDGE CERTIFIED

DATE ISSUED: _____
 WHEN MAINTAINED IN ACCORDANCE WITH "USE OF CALIBRATED
 CONFORMANCE STANDARDS" DOCUMENTATION, THIS CALIBRATION
 STANDARD IS CERTIFIED FOR 2 YEARS FROM THE IN-SERVICE DATE
 BUT NO MORE THAN 4 YEARS FROM THE CALIBRATION DATE
 © 1997, 2015, 2019, Applied Image, Inc., ALL RIGHTS RESERVED



PART NO. AI-CCS-UPC/EAN-E REV S

1653 East Main Street Rochester, NY 14609 USA Voice: 585.482.0300 FAX: 585.288.5989 imaging@appliedimage.com	AI-CCS-UPC/EAN- Enhanced Conformance Calibration Standard Product Specifications	
--	--	---

The above image is an approximate representation of the actual product.
Specifications are subject to change without notice.

Description: This card contains five precision 1D barcodes (one EAN and four UPC) which have been calibrated using an extremely high resolution reflection microdensitometer. Symbols used on this card are identical to those of similar cards which have been available for many years. Each card is individually serialized and calibrated. A calibration certificate and calibration data sheet is supplied with each card.

Complete calibration results of each symbol are reported in the supplied Calibration Report and a summary of the main parameters are written on the card near each symbol. Traceability to NIST and a statement of estimated uncertainty is documented on the supplied Calibration Certificate.

Compared to previous card, this card has been enhanced with the addition of a thicker and flatter backing plate as well as 4 calibrated reflectance patches.

Measurements have been made in accordance with ISO 15416:

- Illumination is with a single wavelength (which is reported on both the card and the calibration report)
- Reflectance is traceable to NIST
- Illumination is at 45 degrees and collection is perpendicular to the surface.

These Primary Reference Test Symbols have been made and calibrated in accordance with ISO-15426-1:

- Achieved parameter values are sufficiently far from grade transition points to avoid uncertainty per Table A.1
- Has national standard traceability for reflectance and linear distance.
- Linear distance repeatability over the same scan path is within 0.5µm.
- Reflectance repeatability over the same scan path +/- 0.5%.

1653 East Main Street Rochester, NY 14609 USA Voice: 585.482.0300 FAX: 585.288.5989 imaging@appliedimage.com	AI-CCS-UPC/EAN- Enhanced Conformance Calibration Standard Product Specifications	
--	--	---

Default Calibration Aperture: Unless otherwise specified, this card is calibrated with a 150 μ (0.006") aperture.

Substrate Size/Overall size: 216mm x 152mm (8.5 x 6 inches)

Substrate Type: White photo paper bonded to a rigid, flat black plastic board. Typical thickness is 2.5mm (0.1").

Image Forming Material: Photo-Emulsion

Image Description: All symbols are 100% size EAN/UPC with a nominal small bar size of 330 μ (0.013").

The topmost two symbols have all parameters made to Grade 4(A). They also have pass/fail bars in the outer portions of the quiet zones, so that a verifier can be tested to properly identify quiet zone encroachment.

The middle, left symbol (Defects, Void) tests the Defect parameter by incorporating a precise void in one of the large bars and reducing the ISO/ANSI Defect grade to 2(C).

The middle, right symbol (Decodability, Bar) has a decodability defect built in to reduce decodability to Grade 2(C).

The bottom symbol tests symbol contrast by placing dark gray bars on a gray background and reducing the contrast to Grade 2(C).

Polarity: Positive

Reading Direction: Right Read Emulsion Up (RREU)

Image Contrast / Density: The first 4 symbols are high contrast (Grade 4(A) or near Grade 4(A) contrast, depending on scanning aperture size). The last symbol is a dark gray on gray test of Grade 2(C) contrast.

History / Typical Use: To check that a bar code verifier is measuring properly. These symbols are scanned with the verifier, then the verifier results are compared to the calibrated values to determine if the verifier is

1653 East Main Street Rochester, NY 14609 USA Voice: 585.482.0300 FAX: 585.288.5989 imaging@appliedimage.com	AI-CCS-UPC/EAN- Enhanced Conformance Calibration Standard Product Specifications	
--	--	---

measuring properly.

The following items are included in the Calibration Data:

elem Number of elements - Total number of bars and spaces.

SC Symbol Contrast- Equal to the highest reflectance in the entire profile minus the lowest, (Rmax - Rmin).

MEC Minimum Edge Contrast - The smallest difference in reflectance between adjacent elements. This is the basis of the Modulation calculation.

ERNS Element Reflectance Non-Uniformity of Spaces - The largest of reflectance variations within each space compared to all the spaces and the quiet zones. This is the basis of the Defects calculation.

ERNB Element Reflectance Non-Uniformity of Bars- The largest of reflectance variations within each bar compared to all the bars and the quiet zones. This is the basis of the Defects calculation.

ERNQZ Element Reflectance Non-Uniformity of the Quiet Zones- If this reflectance value is responsible for the worst defect in the profile, a tick mark will appear, <.

LEADQZ Leading Quiet Zone - A "1" indicates the quiet zone on the left of the profile is greater than ten times Z. A "0<" indicates otherwise. Note, symbol may have been scanned back to front.

TRLQZ Trailing Quiet Zone A "1" indicates the quiet zone on the right of the profile is greater than ten times Z. A "0<" indicates otherwise. Note, symbol may have been scanned back to front.

Format Format of the Data - The numeral is the number of thousands of points in the profile. The alpha is either "A" or "B" for ANSI format and HP Binary format respectively.

Rmin Minimum Reflectance - The lowest reflectance value in the entire profile. This is the basis of the Symbol Contrast calculation.

Rmax Maximum Reflectance- The highest reflectance value in the entire profile. This is the basis of the Symbol Contrast calculation.

1653 East Main Street Rochester, NY 14609 USA Voice: 585.482.0300 FAX: 585.288.5989 imaging@appliedimage.com	AI-CCS-UPC/EAN- Enhanced Conformance Calibration Standard Product Specifications	
--	--	---

AvBar% Average Bar Width (deviation from ideal)

Decod% Decodability Percentage

Corr Correlation Factor of Edge Finding Linear Regression - The number parts per thousand in variation off the line used to calculate the edge. Values greater than 5 indicate sub-laboratory grade element width repeatability. A "-" next to the number indicates fewer than three points on an edge were encountered in the profile.

MOD% Modulation: as defined in ISO 15416

DEF% Defects Note: Some symbols do not have % Defect reported, because the value is too low and is non-repeatable due to surface reflection noise.

EleOut Number of Elements Out of Printing Tolerance - Uses traditional printing tolerance.

Decode Character Decode Validity Check - Every character passed is "1" and "0" is otherwise.

Element Widths (as seen by scanning aperture, these dimensions will vary with different apertures)

Widths are shown in mils (i.e.: 15.18 = 0.01518")