



## Overview

Product name	TE42-LL
Principle	<p>A multipurpose test chart for the analysis of resolution, texture reproduction, acutance, dynamic range, noise, color reproduction, distortion, shading, chromatic aberration, and visual analysis.</p> <p>The ability to analyze all of the critical low-light and image quality factors in one image. ISO 19093 recommends using this chart for the best measurement results.</p>

## Features

### OECF

Type/s of pattern	Grayscale
Number of steps	20
Contrast	≈ 20:1 (26 dB, 4.4 f-stops)
Density/Reflection values	Individually measured values are provided in a separate Acceptance Protocol. Production tolerance is ± 0.03 OD.

### Siemens stars

Type/s of pattern	<p>10 Sinusoidal Siemens stars</p> <ul style="list-style-type: none"> <li>• 1 center star, full circle, full contrast</li> <li>• 1 center star, full circle, low contrast</li> <li>• 4 corner stars, full circle, full contrast</li> <li>• 2 lateral stars, full circle, full contrast</li> <li>• 2 lateral stars, full circle, low contrast</li> </ul>
Modulation	<p>Full contrast: ≈ 95 % (S) / ≈ 92 % (H)</p> <p>Low contrast: ≈ 55 % (S) / ≈ 58 % (H)</p> <p>Production tolerance is ± 3%.</p>
Cycles	144



Diameter stars		4:3	16:9	
	A1066	100 mm	100 mm	
	A460	51 mm	38 mm	
Diameter registration marks		A1066	A460	
	H	8 mm	5 mm	
	S	12 mm	---	
Sample rate* [MP]		minimum	maximum	
	A1066 H	2	70	(> 8K)**
	A1066 S	2	30	(HDTV - 8K)**
	A460 H	2	40	(HDTV - 8K)**

## Slanted edges

Type/s of pattern	8 Slanted Edges <ul style="list-style-type: none"> <li>All sub-charts in horizontal and vertical orientation</li> <li>Four in the center part, four in the lateral area</li> <li>Each has a low and high contrast</li> </ul>			
Modulation	Low contrast: $\approx 48\%$ , high contrast: $\approx 82\%$			
Size of sub-chart		4:3 [mm]	16:9 [mm]	
	A1066	104 x 30	104 x 30	
	A460	53 x 15	40 x 11.5	
Sample rate* [MP]		minimum	maximum	
	A1066 H	---***	70	(> 8K)**
	A1066 S	---***	30	(HDTV - 8K)**
	A460 H	---***	40	(HDTV - 8K)**
Density / Reflection values	Individually measured values are provided in a separate Acceptance Protocol. Production tolerance is $\pm 0.03$ OD.			

## Dead Leaves/Noise patches

Type/s of pattern	2 Dead Leaves in the center area, according to the approach from 2016 <ul style="list-style-type: none"> <li>One sub-chart low contrast</li> <li>One sub-chart high contrast</li> </ul>			
Modulation	High contrast Low contrast			
Size of sub-chart		4:3 [mm]	16:9 [mm]	
	A1066	94 x 94	94 x 94	
	A460	48 x 48	36 x 36	
Sample rate* [MP]		minimum	maximum	
	A1066 H	2****	70	(> 8K)**
	A1066 S	2****	30	(HDTV - 8K)**
	A460 H	2****	40	(HDTV - 8K)**



## Color patches

Type/s of pattern	96 patches (similar but not identical to the X-Rite ColorChecker SG) <ul style="list-style-type: none"> <li>• 12 gray steps</li> <li>• RGBCMY</li> <li>• 12 skin tones</li> <li>• 10 pastel colors</li> <li>• 56 mixed colors</li> </ul>
Color values	Individually measured values are provided in a separate Acceptance Protocol.

## Distortion grid

Type/s of pattern	10 black and white registration marks distributed around the chart
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## Shading

Type/s of pattern	Neutral, uniform gray background
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## Visual appraisal, digitalization process

Type/s of pattern	grass, stones
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## General description hardware

Type	Reflective																				
Aspect ratio	4:3 or 16:9																				
Chart size tolerances	+/- 2 mm as they are handmade in-house and depend on the edge protection type																				
Chart size [W x H x D]	<table border="1"> <thead> <tr> <th></th> <th>W [mm]</th> <th>H [mm]</th> <th colspan="2">D [mm]</th> </tr> </thead> <tbody> <tr> <td>A1066 4:3</td> <td>1245</td> <td>835</td> <td colspan="2">3.2</td> </tr> <tr> <td>A1066 16:9</td> <td>1400</td> <td>835</td> <td colspan="2">3.2</td> </tr> <tr> <td>A460</td> <td>600</td> <td>500</td> <td colspan="2">3.2</td> </tr> </tbody> </table>		W [mm]	H [mm]	D [mm]		A1066 4:3	1245	835	3.2		A1066 16:9	1400	835	3.2		A460	600	500	3.2	
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Material	S version background, Siemens stars, slanted edges: matt print H version background, Siemens stars, slanted edges, Dead Leaves, OECF: photographic paper with matt finishing. All versions colors, grass + stones: matt print A1066 is made from three parts, which can differ in gray value with a tolerance of $\pm 0.03$ OD.																				
Mounting	Aluminum composite panel (aluminum Dibond), size A1066 Aluminum, size A460																				
Edge protection	A1066 – No A460 – Fabric tape																				
Service life	2 years																				
Storage	Dark, dry, and free from harmful gas (e.g., formaldehyde or ozone). 20 °C and 25 °C with a humidity of 60% – 65% and no direct sunlight at any time.																				
Scope of delivery	Test chart, stable cardboard envelope (A460 charts)																				



## Miscellaneous

Evaluation/Assessment	Supported by iQ-Analyzer, visual appraisal is possible
Reference data iQ-Analyzer-X	An individual reference file is provided
Measurement device	X-Rite eXact <a href="https://www.image-engineering.de/content/products/charts/IE_reference_data_accuracy.pdf">https://www.image-engineering.de/content/products/charts/IE_reference_data_accuracy.pdf</a>
Accessories	Chart case A460, A1066
Related Products	iQ-Chartmount, LED-Panel, iQ-Near Focus, iQ-Flatlight, VCX
Terms & Conditions	<a href="https://www.image-engineering.de/terms-and-conditions">image-engineering.de/terms-and-conditions</a>

\* If the chart fills the image height, the chart can be used with a camera of a minimum/maximum sample rate, stated in megapixels (MP).

\*\* HDTV ~ 2.1 MP, 4K ~ 8.3 MP, 8K ~ 33 MP

\*\*\* No lower limit for slanted edges. Small ROI increases variance, min. 100-pixel ROI required.

\*\*\*\* ROI should be reproduced by at least 128 by 128 pixels, with a lower limit based on this requirement.