



## Overview

Product name	TE268 A
Principle	Test chart to determine the resolution of a digital camera based on sinusoidal Siemens stars, slanted edges and noise pattern. The Siemens stars and slanted edges comply to ISO 12233.

## Features

### Siemens stars

Type of pattern	25 sinusoidal Siemens stars, each with 16 surrounding gray patches		
Modulation	~92%		
Cycles	144		
Diameter stars [mm]		4:3	3:2
	A1066 H/S	145	141
	A460 H	61	55
Diameter registration marks [mm]	H	5	
	S	12	
Gray steps	The contrast of the gray scale complies to the contrast of the Siemens star. Please refer to Acceptance protocol for exact reflectance of each step.		
Reference data	Individually measured on center star. Allowed variation of linearity of gray patches of 15% (remission) max.		
Sample rate* [MP]		minimum	maximum
	A1066 H	8	180 (> 8K)**
	A1066 S	2	30 (HDTV - 8K)**
	A460 H	2	40 (HDTV - 8K)**



## Slanted edges

Type/s of pattern	16 subcharts of slanted edges, each consisting of 4 slanted edges with different modulation			
Modulation [%]	40, 60, 80, 100			
Size of sub-chart [mm]		4:3	3:2	
		vertical / horizontal	vertical / horizontal	
	A1066	80 x 37 / 75 x 40	78 x 36 / 72 x 39	
	A460	33 x 15 / 31 x 17	30 x 14 / 27 x 15	
Sample rate* [MP]		minimum	maximum	
	A1066 H	---***	180	(> 8K)**
	A1066 S	---***	30	(HDTV - 8K)**
	A460 H	---***	40	(HDTV - 8K)**

## Dead Leaves/Noise patches

Type/s of pattern	4 subcharts of dead leaves patterns (gray, red green, blue) with reference patches		
Size of sub-chart [mm]		4:3	3:2
	A1066	149 x 75	145 x 72
	A460	55 x 27	62 x 31
Variations	Circular structures with random diameters and gray and color levels		

## General description hardware

Type	Reflective (A)				
Aspect ratio	4:3 or 3:2				
Chart size [W x H x D] [mm]		W	H	D	
	A1066	1245	835	3.2	
	A460	600	500	3.2	
Picture size [mm]		4:3		3:2	
		W	H	W	H
	A1066	1110	832	1213	808
	A460	460	345	460	306.3
Material	H: Photographic paper, matt finishing, resolution 9-10 LP/mm, made from three parts which can differ in gray value with a tolerance of ± 0.03 OD S: Specific matt paper, resolution 3-4 LP/mm				
Mounting	aluminum composite panel (A1066) aluminum (A460)				
Edge protection	none (A1066), fabric tape (A460)				
Chart size tolerances	Up to +/- 0.5 mm as they are handmade in-house and no edge protection is used (A1066) Up to +/- 2 mm as they are handmade in-house and fabric tape is used (A460)				
Service life	3 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, cardboard box (except A1066), acceptance protocol				



## Miscellaneous

Evaluation / Assessment	supported by iQ-Analyzer In some cases, not all patterns may be analyzed. Please refer to the latest iQ-Analyzer manual for details
Reference data iQ-Analyzer-X	Not applicable
Measurement device	X-Rite eXact (reflective charts) <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>
Standards	ISO 12233 Resolution and special frequency responses
Terms & Conditions	<a href="https://www.image-engineering.de/terms-and-conditions">image-engineering.de/terms-and-conditions</a>

\* if chart fills the image height the chart can be used with a camera of minimum/maximum sample rate, stated in mega pixel (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