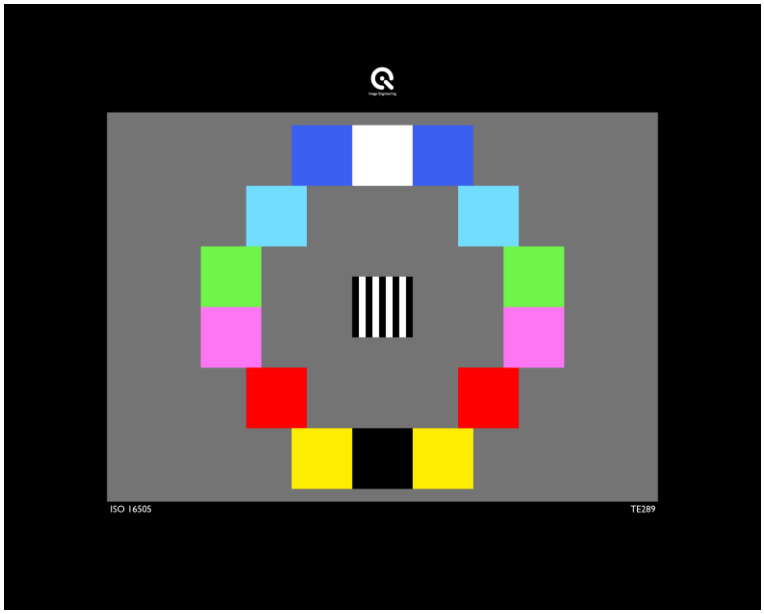
TE289 A data sheet



Overview

Product name	TE289 A
Principle	Test chart to determine the color reproduction mirror replacement system, compliant to ISO 16505

Features

Color patches

Type/s of pattern	2x 6 colors (primary and secondary colors) and black and white patches, circular arranged
Color values	Print version: Colors printed by matt print Munsell version: Colors with Munsell paper (default color values provided by x-rite) Batch measured, individual measurement on request
Size of color patch [mm]	10 x 10
Background	OD 0.75
Line feature	4.5 cycles of black and white lines Line width 4.4 mm
Surface finish	The color surface, especially the Munsell patches may show scratches or streaks. This issue does not affect the test chart's function, as the scratches/streaks are not visible under standard illumination geometry. We also recommend recording the color chart slightly out of focus to obtain a stable average value in the result.

General description hardware

Type	Reflective (A)			
Aspect ratio	special			
Chart size [mm]		W	H	D
	A360	500	400	3.2
Picture size [mm]		W	H	
	A360	364	257	

Material	Print version: Specific matt paper, resolution 3-4 LP/mm Munsell version: Specific matt paper, resolution 3-4 LP/mm, colors made of Munsell paper
Mounting	Aluminum
Edge protection	Fabric tape, might have influence to chart thickness tolerance
Chart size tolerances	Up to +/- 2 mm as they are handmade in-house and fabric tape is used
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 35% – 65% and no direct sunlight at any time.
Scope of delivery	Test chart, cardboard case for storing the chart safely

Miscellaneous

Evaluation / Assessment	Visual appraisal on monitor, analysis with iQ-Analyzer V6 (since version 6.2)
Measurement device	X-Rite eXact (reflective charts) https://www.image-engineering.de/content/products/charts/IE_reference_data_accuracy.pdf
Standards	ISO 16505 Road vehicles – Ergonomic and performance specs of Camera Monitor Systems – Requirements and test procedures
Accessories	Chart case
Related Products	TE287, TE288, TE290, (TE197)
Terms & Conditions	image-engineering.de/terms-and-conditions

Reference data TE289 - Print

Name	CIE XYZ_D50			CIE Lab_D50			Munsell Notation		
	X	Y	Z	L*	a*	b*	Hue	Value	Chroma
Blue	6,63	5,92	15,08	29,20	9,96	-35,55	7.5 PB	2.9	12.7
Green	9,85	18,63	8,48	50,25	-51,83	20,56	0.25 G	5.4	8.65
Red	28,82	16,11	3,86	47,12	62,21	36,76	5 R	4	12
Yellow	65,55	69,19	7,80	86,60	-2,59	85,78	5 Y	8	11.1
Magenta	32,00	17,13	14,32	48,43	68,46	-0,47	2.5 RP	5	12
Cyan	14,26	21,72	46,79	53,73	-36,14	-45,31	5 B	5	8
White	79,13	81,37	70,40	92,30	1,33	-2,96	-	-	-
Black (1.50*	3,75	3,83	2,86	23,12	0,83	2,26	-	2	-
Background	15,83	16,28	13,74	47,34	0,73	-0,81	-	-	-

The table above gives batch measured reference data.

For individually measured charts CIE XYZ_D50 and CIE Lab_D50 values of all colors and the background are measured. The actual value can deviate from the above value.

Reference data TE289 - Munsell

Name	CIE XYZ_D50			CIE Lab_D50			Munsell Notation		
	X	Y	Z	L*	a*	b*	Hue	Value	Chroma
Blue	6,81	5,60	20,78	28,37	15,42	-49,80	7.5 PB	2.9	12.7
Green	14,14	22,33	7,29	54,38	-39,72	32,27	0.25 G	5.4	8.65
Red	21,44	12,78	3,87	42,43	51,05	28,62	5 R	4	12
Yellow	58,89	59,93	7,08	81,80	2,67	80,41	5 Y	8	11.1
Magenta	29,91	18,95	22,14	50,63	51,28	-14,12	2.5 RP	5	12
Cyan	12,48	18,06	29,14	49,57	-29,71	-28,32	5 B	5	8
White	79,13	81,37	70,40	92,30	1,33	-2,96	-	-	-
Black (1.50*)	3,04	3,15	2,66	20,64	0,07	-0,46	-	2	-
Background	15,83	16,28	13,74	47,34	0,73	-0,81	-	-	-

The table above follows the original X-Rite data sheet, given with the ColorChecker for CIE L*a*b* and Munsell notation (except "White"). The CIE XYZ (for illuminant D50) values are calculated by using the origin L*a*b* values. According to X-Rite these values are "a generic, averaged colorimetric description of the ColorChecker charts. For highest accuracy it is a good idea to create custom reference files for a chart."

For individually measured charts CIE XYZ_D50 and CIE Lab_D50 values of all colors and the background are measured. The actual value can deviate from the above value.