

Imatest - Cross-reference tables

Tables to help you navigate Imatest

Imatest is a complex, rich application involving a great many image quality factors, modules, and test charts. The tables below, sorted by [Quality Factor](#), [Module](#), and [Test chart](#) are designed to help navigate the site. A [Table of contents](#) is also available.

Suppliers

Supplier	Chart(s) and comments	Location
Imatest	SFRplus and other charts may be ordered from the Imatest store .	Boulder, CO USA
Applied Image	ISO 12233 (original and modified: QA-77 with low contrast edges) ; several charts described in Stepchart: Applied Image and ISO charts (including ISO-16067-1 , QA-62 , ISO-14524 OECF).	Rochester, NY USA
Image Engineering	Siemens star chart (proposed for the ISO 12233 revision) ; several color and monochrome charts	Cologne (Köln), Germany
Danes-Picta	ColorChecker equivalent = BST11 ; several color and monochrome charts	Prague (Praha), Czech Republic
Stouffer	The Stouffer T4110 transmission step wedge was recommended for single-image Dynamic Range measurements prior to the development of the Imatest 36-patch Dynamic Range chart . (Reflective step charts can be used for DR measurement from several images .)	Chicago, IL USA
Wolf Faust (Coloraid.de)	IT8.7 (standard color target with reference file, printed on photographic paper). Used in Multicharts . Available in the US from Digital Light and Color .	Frankfurt, Germany

Sorted by image quality factors

Image quality factors have their [own page](#). A brief list of recommended test charts is given in the [FAQ](#).

Quality factor	Charts	Module	Comments
Camera, lens			
Color accuracy	GretagMacbeth ColorChecker (24-patch)	Colorcheck, Multicharts	
	IT8.7	Multicharts	
	ColorChecker SG	Multicharts	Imatest Master only
	Custom “pie” charts	Multicharts	Imatest Master only
Dynamic range, Tonal response, Contrast	Step charts	Stepchart	Transmissive charts such as the Stouffer T4110 recommended for older Dynamic Range measurement.
	Reflective step charts	Dynamic Range	More convenient for measuring DR than Stepchart because it doesn't require a transmission chart.
	Special charts: ISO-16067-1 , QA-62 , ISO-14524 OECF , ISO-15739 Noise, 20-patch OECF charts	Stepchart	Imatest Master only. Most are available from Applied Image .
	ColorChecker , ColorChecker SG , IT8.7 , Step Charts	Multicharts	
Exposure accuracy	Step chart (reflective) such as the Kodak Q-13/Q-14	Stepchart	
	GretagMacbeth ColorChecker	Colorcheck	

Lateral chromatic aberration	Slanted edge (can be printed from Test Charts)	SFR Rescharts SFR	Printable by Test Charts
	ISO 12233, Applied Image QA-77		Printed on photographic media
Lens distortion	Square or rectangular grid or checkerboard (can be printed from Test Charts or displayed with Screen Patterns), SFRplus chart	Distortion SFRplus	Grid or checkerboard printable by Test Charts .
Light falloff, vignetting	plain, uniformly lit surface	Lightfall	Best: Screen Patterns with LCD flat screen.
Noise	Step charts such as the Kodak Q-13/Q-14	Stepchart	
	GretagMacbeth ColorChecker	Colorcheck	
Sharpness (MTF)	Slanted-edge (can be printed from Test Charts) ISO 12233, Applied Image QA-77 Log Frequency chart Log F-Contrast chart Star chart	SFR Rescharts SFR Log Frequency Log F-Contrast Star Chart	Printable by Test Charts Printed on photographic media Printable by Test Charts Printable by Test Charts " or purchase from Image Engineering
	SFRplus chart (highly automated)	SFRplus	Printable or purchase from the Imatest store

Veiling glare (lens flare)	Reflective step chart with "black hole"	Stepchart	
Color moiré	Log Frequency	Log Frequency	Part of Rescharts
Software artifacts	Log F-Contrast	Log F-Contrast	Part of Rescharts

Data compression	Log F-Contrast	Log F-Contrast	<i>Not yet fully supported</i>
Prints			
Dmax (deepest black tone)	Custom test chart printed from file, scanned on profiled flatbed scanner	Print Test	Gamutvision extracts these properties from ICC profiles.
Color gamut			

Sorted by module

Modules are listed on the [Tour](#) page.



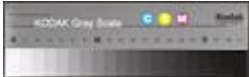
Module	Quality factor	Charts	Comments
Colorcheck	Color accuracy , Tonal response , Contrast ,	GretagMacbeth ColorChecker	
Distortion	Lens distortion	Square or rectangular grid	
Lightfall	Light falloff , vignetting	plain, uniformly lit surface	
Multicharts	Color accuracy , Tonal response , Contrast	GretagMacbeth ColorChecker , IT8.7 , ColorChecker SG , Step charts, special charts: ISO-16067-1 , QA-62 , EIA Grayscale , ISO-14524 OECF , ISO-15739 Noise , 20-patch OECF charts	ColorChecker SG, Step charts, special charts: Imatest Master only
SFR , Rescharts SFR	Sharpness (MTF) , Lateral chromatic aberration	Slanted-edge (printable by Test Charts), ISO 12233 , Applied Image QA-77	Also measures Subjective Quality Factor (SQF) .
SFRplus	Sharpness (MTF) , Lateral	SFRplus chart	Highly automated module: no manual ROI

	chromatic aberration , Tonal response , Lens distortion		selection. Chart available from the Imatest store .
Stepchart	Tonal response , Contrast , Noise , Dynamic range , Exposure accuracy , Veiling glare (lens flare)	Step charts, Special charts: ISO-16067-1 , QA-62 , EIA Grayscale , ISO-14524 OECF , ISO-15739 Noise , 20-patch OECF charts	Special charts in Imatest Master only. Transmissive charts such as the Stouffer T4110 recommended for DR.
Dynamic Range	(Postprocessor for Stepchart) Tonal response , Dynamic range	Reflective step charts such as the Kodak Q-14/Q-14.	Usually more convenient than Stepchart for measuring DR because it doesn't require a transmission chart, special light source, and darkened room.
Print Test	Dmax (deepest black tone), Color gamut	Custom test chart printed from file, scanned on profiled flatbed scanner	Gamutvision extracts these properties from ICC profiles.
Log Frequency	Sharpness (MTF) , Color moiré	Log Frequency (can also use Log Frequency-Contrast chart)	Part of Rescharts
Log F-Contrast	Sharpness (MTF) , Software artifacts	Log Frequency-Contrast	Part of Rescharts
Star Chart	Sharpness (MTF)	Star chart	Part of Rescharts

Sorted by test chart

This list is primarily commercially-available test charts. You can print out additional charts from files generated by the [Test Charts](#) module.

Chart	Quality factor	Module	Comments
	Sharpness (MTF) , Lateral chromatic aberration , Tonal response , Lens distortion	SFRplus	Designed to measure several key image quality factors from a single image with a high degree of automation: no manual ROI selection. SFRplus operates interactively inside Rescharts of as a fully automated module with no user intervention.
	Color accuracy , Tonal response	Multicharts	
	Color accuracy , Tonal response	Multicharts (Special charts)	Imatest Master only.
	Color accuracy , Tonal response	Multicharts	Imatest Master only.
	Color accuracy , Tonal response , Noise	Colorcheck , Multicharts	Widely available; consistent pigments. A compatible chart is available from Danes-Picta .
	Sharpness , Lateral chromatic aberration , Subjective Quality Factor (SQF)	SFR	Printed on high resolution photographic media. Slanted-edge charts printed on a high quality inkjets can perform the same function, but aren't as fine.
	Color accuracy , Tonal	Multicharts	Requires reference file

	response		
 <p>Monochrome charts: ISO-16067-1, QA-62, EIA Grayscale, ISO-14524, OECF, ISO-15739 Noise, 20-patch OECF charts</p>	Dynamic range , Tonal response , Contrast	Stepchart , Multicharts (Special charts)	Imatest Master only. Most are available from Applied Image .
 <p>QPcard 201</p>	Color accuracy , Tonal response	Multicharts	Inexpensive chart
 <p>Step charts (reflective): Kodak Q-13, Q-14, etc.</p>	Tonal response , Contrast , Noise , Exposure accuracy , Veiling glare	Stepchart , Multicharts , Dynamic Range	Veiling glare is measured with “black hole” next to the Q-13. May be purchased from professional camera stores or Danes-Picta .
<p>Step charts (transmissive): Stouffer T4110, etc.</p>	Dynamic range , Tonal response , Contrast , Noise	Stepchart	Best for measuring dynamic range
<p>Log Frequency, Log</p>	Sharpness , Color moiré , Detail lost to software noise reduction	Rescharts Log Frequency , Log F-Contrast	MTF is a check on the slanted-edge method; more direct but less accurate.

F-Contrast (sine or bar)			
Siemens star chart	Sharpness	Star chart	Imatest Master only. May be created for printing by Test Charts or purchased from Image Engineering .

Test images

These images were put online for testing Imatest API/EXE, but they are generally useful for testing Imatest. This is not a comprehensive list of charts, which can be found in the [above table](#).

Module	Image file	Description
		Webcam image of high and medium contrast custom charts created by Test Charts and printed on an Epson R2400 printer: these can have larger regions of interest (ROIs) than the ISO 12233 chart below.
		Webcam image of ISO 12233 chart. At this distance the available regions of interest are very small.
		Webcam image of the Kodak Q-14 grayscale and GretagMacbeth ColorChecker.
		Image of the Stouffer T4110 transmission test chart taken with the Canon Powershot G2. Excellent dynamic range measurement.
	(image in Colorcheck, above) GMB_Q-14_webcam.jpg	Webcam image of the Kodak Q-14 grayscale and GretagMacbeth ColorChecker.
		12-patch OECF chart (for API and Imatest Master only). Available from Applied Image .

		Image of Kodak Q-14 chart with “black hole” cavity for measuring veiling glare (susceptibility to lens flare)
		Webcam image of distortion grid.
		Image of nearly uniformly illuminated surface taken with the Canon 10-22mm lens on the EOS-20D, f/4.5, 22mm, ISO 1600.
		Image Log-Frequency-Contrast chart (cropped), acquired by the EOS-20D camera, 24-70mm f/2.8L lens set at 42mm, f/5.6, ISO 100. Can also be used with Log Frequency .

Algorithms

Module	Algorithm link	Brief description
Stepchart	www.imatest.com/docs/q13.com#Algorithm	
		<p>Slanted-edge MTF measurement. The calculation is derived from ISO-12233. The average edge is calculated using a 4x oversampling binning algorithm. MTF is the Fourier transform of the derivative of the differentiated edge (the average line spread function (LSF)). The Imatest algorithm is more immune to noise and lens distortion than the standard ISO algorithm, which can be selected in a checkbox if desired.</p>