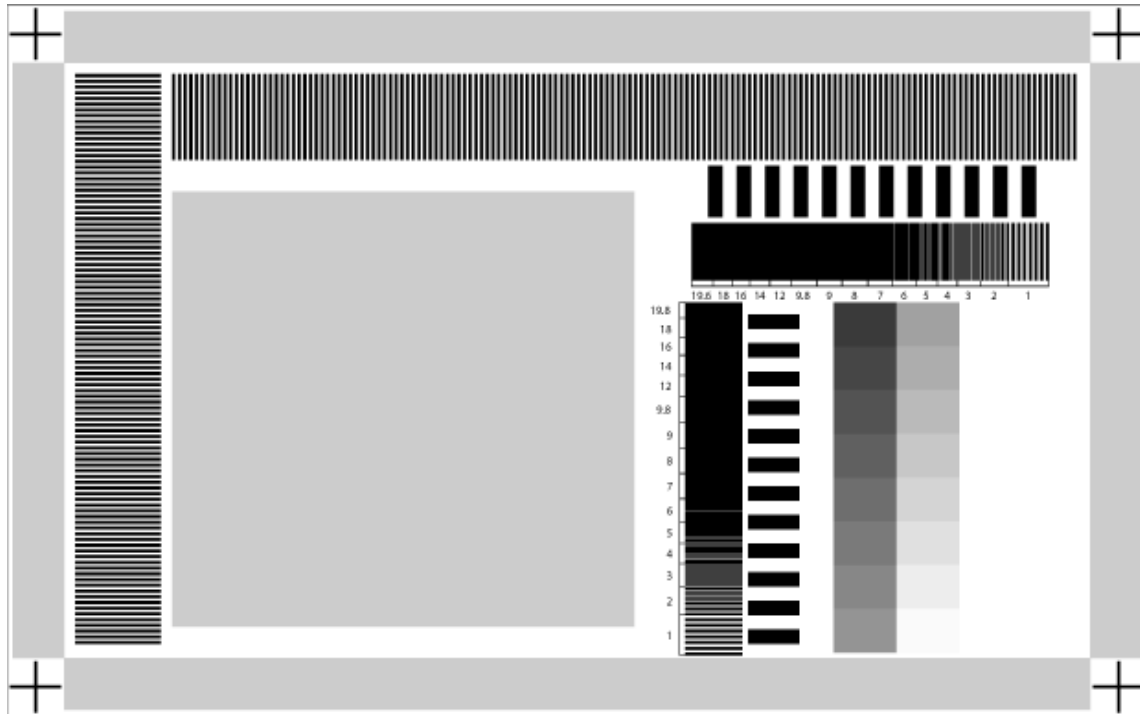


Catalog Part No: QA-74-P-RM

Product Name: FBI SIQT Scanner Test Chart

Drawing / Photo of part:



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

General Description: This chart is used for evaluation of reflective fingerprint scanners. Test elements contained on this chart can be used for tests as described in Mitre document, *Test Procedures for Verifying IAFIS Image Quality Requirements for Fingerprint Scanners and Printers*.

Image Description: The test chart includes the following items.

- Sixteen stepped density patches (7.6mm x 11mm each)
- Resolution bar patterns ranging in frequency from 1.0 to 19.6 cycle per mm, one each in horizontal and vertical orientation
- Reference bars 2.5mm x 10 mm (horizontal and vertical, adjacent to resolution groups for geometric accuracy)

- Horizontal and vertical Ronchi patterns (1 cycle per mm for geometric accuracy)
- Mid-scale density patches along each chart-edge (grey areas for uniformity)
- Large mid-scale patch, 75mm x 80mm (grey area for uniformity)

Target Size: Overall size 200mm x 124mm

Substrate Type: Photographic paper

Image Polarity: Positive (dark features on a white reflective background)

Image Contrast / Density:

- Maximum reflection density of  $1.53 \pm 0.04$
- Mid-scale density patches of  $0.40 \pm 0.02$
- Minimum chart density of  $0.09 \pm 0.02$

History / typical use: Evaluation of fingerprint scanners for conformance to IAFIS Image Quality Requirements for Fingerprint Scanners and Printers.

Guidelines for Usage: The Chart must be kept flat, clean and free from creases.

Terms:

- SIQT *stands for* Scanner Image Quality Test
- IAFIS *stands for* Integrated Automated Fingerprint Identification System
- CTF *stands for* Contrast Transfer Function
- MTF *stands for* Modulation Transfer Function
- cy/mm *is equivalent to* cycles per millimeter
- line pairs per mm (lp/mm) or lines per mm (lpmm) *equals* cy/mm
- ppi *is equivalent to* pixels per inch

Required Test Charts:

Charts as required by, "Test Procedures for Verifying IAFIS Image Quality Requirements for Fingerprint Scanners and Printers"; Mitre Technical Report MTR 05B0000016, April 2005, and can be found at [http://www.mitre.org/tech/mtf/spec\\_test.zip](http://www.mitre.org/tech/mtf/spec_test.zip) (named f-test.pdf in the zip archive) (This document supersedes the Nov, 1994 Mitre document MP 94B0000039R1.)

Other Links:

<http://www.mitre.org/tech/mtf/>

[http://www.mitre.org/work/tech\\_papers/tech\\_papers\\_07/06\\_1384/06\\_1384.pdf](http://www.mitre.org/work/tech_papers/tech_papers_07/06_1384/06_1384.pdf)  
(TEST PROCEDURES FOR VERIFYING IMAGE QUALITY REQUIREMENTS FOR PERSONAL IDENTITY VERIFICATION (PIV) SINGLE FINGER CAPTURE DEVICES)

Test targets available from Applied Image by section of the above document (05B0000016) are as follow (newer documents and versions specific to single fingerprint scanners may also be applicable):

<i>Section</i>	<i>Paper Scanner</i>	<i>Live Scanner *</i>
2.1.3 Linearity: Gray Patches	<b>M-13-60-1-RM</b>	<b>ST-23-TM</b>
2.2.3 Resolution and Geometric Accuracy: Ronchi Patterns	<b>QA-74-P-RM</b>	
	<b>RR-1-RM</b> <i>(2 required)</i>	<b>RR-1-TM</b> <i>or</i> <b>RR-1-45-CG</b>
2.3.2 Spatial Frequency Response: Sine and Black / White Bar	<b>M-13-60-1-RM</b> <i>(MTF for 500 ppi only)</i>	
	<b>M-15-60-RM</b> <i>(MTF for 500 or 1000 ppi)</i>	
	<b>QA-74-P-RM</b> <i>(CTF for 500 or 1000 ppi)</i>	
		<b>T-90-1-P-RM</b> <i>(CTF @ 1-20 cy/mm)</i> <b>T-90-2-P-CG</b> <i>(CTF @ 1-100 cy/mm)</i>
2.4.3 Signal to Noise Ratio: Large Gray Patch	<b>ST-11-07-810-RM</b> <b>ST-11-79-810-RM</b>	<b>ST-11-07-810-TM</b> <b>ST-11-79-810-TM</b>

2.5.2 Gray Level Uniformity: Large Gray Patch		
2.6.2 Fingerprint Image Quality	<i>Cards supplied by the FBI</i>	

\* Note that part numbers ending with “-RM” must be used with reflection scanners and those ending with “-TM” or “-CG” must be used for transmission scanners.

Related Parts: **SINE M-13-60-S-RM** which is useful for;

: Modulation Transfer Function (MTF) evaluation of *Live Scanner* fingerprint scanners for conformance to IAFIS image quality requirements.<sup>i</sup> The Mitre Corporation has developed its *MTF* application to compute the Modulation Transfer Function of an imaging system using sinusoidal targets. This open source also detects and quantifies aliasing. It is available for download at [www.mitre.org/tech/mtf/mtf.zip](http://www.mitre.org/tech/mtf/mtf.zip).

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<sup>i</sup> “TEST PROCEDURES FOR VERIFYING IMAGE QUALITY REQUIREMENTS FOR PERSONAL IDENTITY VERIFICATION (PIV) SINGLE FINGER CAPTURE DEVICES”; Mitre Technical Report MTR 060170, December 2006, is found at [www.mitre.org/work/tech\\_papers/tech\\_papers\\_07/06\\_1384/06\\_1384.pdf](http://www.mitre.org/work/tech_papers/tech_papers_07/06_1384/06_1384.pdf).