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Sinusoidal Array
M-13-60-S-RM

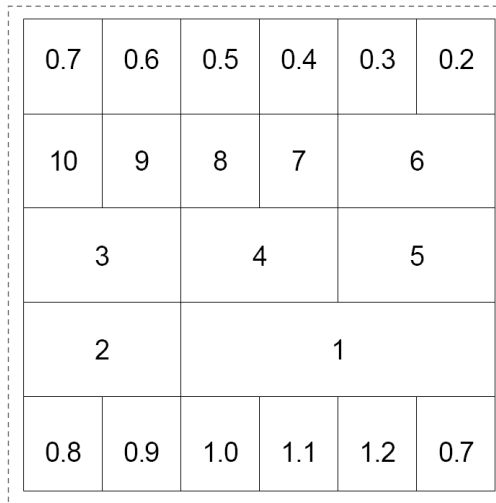


Product Specifications

Catalog Part No: **SINE M-13-60-S-RM**

Product Name: **Reflection Sinusoidal Array**

Drawing / Photo of part:



The above image is a representation of the relative location of features on the actual product.

Description: The reflection sinusoidal array M-13-60-S is an image measuring 15 mm square on a 16 mm square piece of photographic paper. The image features sinusoidal areas ranging in frequency from 1.0 to 10.0 cycles per mm arranged in the three middle rows as shown above. Nominal modulation¹ of the sinusoidal areas is 60%. The top and bottom rows are density scales, labeled in the above diagram with their nominal density. Each M-13-60-S is serialized and supplied with a report of its own microdensitometer scan. This report includes average density of each density patch, modulation of each sinusoidal area along with its fundamental, second and third harmonic values. Modulation values are also provided with compensation for the MTF of the scanning microdensitometer.

Substrate Size, Type, Image Forming Material, Frequency Range:

| <i>Part Number</i> | <i>Substrate Size (mm)</i> | <i>Substrate Type</i> | <i>Image Forming Material</i> | <i>Frequencies (c/mm)</i> |
|--------------------|----------------------------|-----------------------|-------------------------------|---------------------------|
| M-13-60-S-RM | 16 x 16 | Photo-paper | B&W photographic emulsion | 1 thru 10 |

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Reading Direction:

Emulsion side facing up (RREU)

Image Contrast / Density:

Reflection densities reference patches range from approximately 0.20 to 1.20.

History / Typical Use: Modulation Transfer Function (MTF) evaluation of *Live Scanner* fingerprint scanners for conformance to IAFIS image quality requirements.² 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.

¹ Modulation is defined as the difference of Rmax and Rmin / their sum. ($R_{/100}$ is percent reflection, related to density by the expression $R = 10^{-\text{density}}$.)

² "Test Procedures for Verifying IAFIS Image Quality Requirements for Fingerprint Scanners and Printers"; Mitre Technical Report MTR 05B0000016, April 2005, is found at www.mitre.org/tech/mtf/tp.pdf. (This document supersedes the Nov, 1994 Mitre document, MP 94B0000039R1.)