

# National Bureau of Standards

## Certificate

### Standard Reference Material 3210

#### Secondary Standard Flexible Disk Cartridge

#### (Computer Amplitude Reference)

W. B. Truitt and M. D. Hogan

This Standard Reference Material (SRM) is intended for use in the calibration of the output signal amplitude from magnetic flexible disk cartridge recording and reproducing systems. It is defined as an NBS Secondary Standard Flexible Disk Cartridge (Computer Amplitude Reference). This SRM consists of an unrecorded 200 mm (8 inch) flexible disk cartridge which is certified to meet specific requirements in support of the American National Standard for Single-Sided Unformatted Flexible Disk Cartridge (for 6631 BPR Use), American National Standards Institute (ANSI) document X3.73-1980.

The National Bureau of Standards maintains a Master Standard Flexible Disk Cartridge (Computer Amplitude Reference) in repository that is used periodically to calibrate selected Working Standard Flexible Disk Cartridges. These selected disks, in turn, are used to calibrate the instrumentation for measuring and documenting the performance of the NBS Secondary Standard Flexible Disk Cartridge (Computer Amplitude Reference) SRM 3210.

Calibrations of Standard Reference Material 3210 and associated data collection and analysis were performed by J.R. Park, NBS Center for Computer Systems Engineering.

The program leading to this certificate was coordinated by S.B. Geller, NBS Center for Computer Systems Engineering.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Office of Standard Reference Materials by R.W. Seward.

The signal output from the NBS Master Standard Flexible Disk Cartridge is used to establish two Reference Amplitudes under two separate test conditions. Each SRM 3210 is then calibrated with respect to these reference amplitudes. All measurements are performed on Side 0 of the flexible disk cartridge. The average signal amplitude measurements for each SRM 3210 are made at a test recording frequency of 250,000 flux transitions per second (ftps) on track 00 and at a test recording frequency of 500,000 flux transitions per second (ftps) on track 76. The test recording currents used for making the average signal amplitude measurements for each SRM 3210 are 1.5 times those recording currents which produce the reference magnetic field at 250,000 ftps on tracks 00 and 76, respectively. The reference magnetic field is the typical magnetic field of the NBS Master Standard Flexible Disk Cartridge. The typical magnetic field is the minimum recording field that, when applied to a flexible disk cartridge, causes a signal output equal to 95% of the maximum average signal amplitude at the specified track and flux transitions per second of that flexible disk cartridge. The terms used in this certificate are defined in ANSI document X3.73-1980. The property certified by NBS for each SRM 3210 is the average signal amplitude measured over one complete track (either track 00 or 76).

No characteristics other than the preceding average signal amplitudes are implied or ascribed to this reference material.

Three charts showing the average signal amplitude (or amplitude units) versus the recording current accompany each SRM 3210.

- a) The first chart is produced from SRM 3210 (Serial No.                      ) on track 00 at a test recording frequency of 250,000 ftps. It provides the average signal amplitude at the test recording current and the typical magnetic field expressed as percentages of the reference amplitude and the reference magnetic field, respectively.
- b) The second chart is produced from SRM 3210 (Serial No.                      ) on track 76 at a test recording frequency of 250,000 ftps. It provides the typical magnetic field expressed as a percentage of the reference magnetic field.
- c) The third chart is produced from SRM 3210 (Serial No.                      ) on track 76 at a test recording frequency of 500,000 ftps. It provides the average signal amplitude as a percentage of the reference amplitude at the test recording current.

The data provided with each NBS Secondary Standard Flexible Disk Cartridge (Computer Amplitude Reference) SRM 3210 are derived using the NBS Measurement System. The cumulative measurement uncertainties associated with the average signal amplitudes certified for each SRM 3210 on the NBS Measurement System are  $\pm 5\%$  at track 00 and 250,000 ftps and  $\pm 10\%$  at track 76 and 500,000 ftps. The National Bureau of Standards cannot guarantee the repeatability of test data unless the measurements are performed on an equivalent system.

#### Application Notes:

- 1) Measurements shall be performed on SRM 3210 at the ambient conditions of 20.0 to 25.6 °C (68 to 78 °F) and 40 to 60% relative humidity after 24 hours of acclimatization.
- 2) SRM 3210 should be ac bulk-erased before each use and should be used sparingly. It is suggested that working reference flexible disk cartridges be calibrated and used for everyday operations.
- 3) The reference read/write transducers should also be used sparingly. It is suggested that a group of working transducers be calibrated and used for everyday operations.
- 4) The calibration of this Secondary Standard Flexible Disk Cartridge (Computer Amplitude Reference) SRM 3210 has been performed on a Magnetic Peripherals, Inc., Model BR8A2A, Flexible Disk Drive in conjunction with the NBS Measurement System. The mention of this specific equipment should not be construed as an endorsement of this item by NBS to the exclusion of other equivalent devices.