Disk layout of Emulator II floppy disks

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The information in this document is the result of reverse engineering activities on existing floppy disks created on Emulator II samplers.
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The specifications in this document have not been tested thoroughly, and any usage of them are the full and sole responsibility of the user himself/herself.

Log of Changes

Date	Version	Description
09 Oct 2010	0.9	Initial version: - reverse engineering based on signal capturing done with a Digital Storage Oscilloscope on the Shugart interface between the Z80-based proprietary floppy disk controller and the floppy disk drive in the Emulator II - all details of the disk format released, except for the description of 5 bytes called "ID" in version 0.9
10 Oct 2010	1.0	Second version: - the 5 bytes called "ID" are explained with a full A4 page of pretty complicated logic how to construct the 5 bytes.
17 Oct 2010	1.1	Third version: - after a hint from Jeff of the HxC2001 project http://hxc2001.free.fr/floppy_drive_emulator – based on reverse engineering results from www.softpres.org - the explanation of the 5 "ID" bytes has been adapted and significantly simplified. In the previous version of the specs, these bytes were wrongly shifted by 4 bits which made the explanation and values so complicated. This has been corrected now (see *italic part* in the specs) - the disk specifications as a result of the SoftPres reverse engineering efforts are expected to be published by SoftPres on www.softpres.org
08 Nov 2010	1.2	Fourth version: - Error corrected: one sync byte 00h was missing in the specs (after the track number CRC) - Index pulse edge direction mentioned

Two different types of floppy disks exist for Emulator II samplers:

- Library disks, containing individually accessible samples
- Performance disks, containing full sound banks and (optionally) an operating system. This is the most common type of EII disk.

This specification is valid for both library disks and performance disks.

- DSDD soft sectored 5.25 or 3.5 inch floppy disks
- Drive spins at 300 RPM
- FM encoding
- Data transfer rate: 310 kbits/second (including FM clock pulse bits), 155 kbits/second (data bits only)
- 2 sides
- 80 tracks per side

- 1 sector per track
- 3584 bytes/sector
- *Sync of track starts after (initial=) falling edge of the (negative) index detection pulse*
- Each track is built up as follows:
    - GAP: 20 bytes FFh
    - SYNC: 4 bytes 00h
    - IDAM: 2 bytes FAh 96h
    - ID: 1 byte = track number
    - CRC of ID: 2 bytes: direct CRC-16 method with polynomial 8005h, initial CRC value 0000h, final XOR value 0000h
    - *SYNC: 1 byte 00h*
    - GAP: 8 bytes FFh
    - SYNC: 4 bytes 00h
    - Mark: 2 bytes FAh 96h
    - Data: 3584 bytes
    - CRC of data: 2 bytes: direct CRC-16 method with polynomial 8005h, initial CRC value 0000h, final XOR value 0000h
    - SYNC: 2 bytes 00h
    - GAP: 20 bytes FFh