Format of Qemulator Mdump 1&2 files

The image file comprises of a 46 byte header followed by up to 255 sectors of 528 bytes each. (530 in mdump2 images)

Header Format			Mdump1	Mdump2 if different
$00	8 bytes	ID "Mdv*Dump"		
$08	4 bytes	Header length (for versioning)	34 bytes	
$0C	4 bytes	Offset of MDV sector data	46	
$10	2 bytes	Bytes per MDV Sector	528	530
$12	1 byte	Number of sectors in dump		
$13	1byte	Number of sectors in original MDV		
$14	4 bytes	Offset of sectro renumbering table (or null)	0	
$18	4 bytes	Offset of sectro map (or null)	0	
$1C	4 bytes	Offset of global sectro header (or null)	0	
$20	4 bytes	Dump type/extension:		
		Pointer to linked list of extensions (or null)	0	
$24	4 bytes	Flags	1	2
$28	2 bytes	Offset of sector data	16	
$2A	2 bytes	Offset of sector header (or negative)	0	
$2C	2 bytes	Offset of block header (or negative)	14	

Sector Format

The first sector is sector 0 (map) followed by the highest good sector, and counting down to sector 1 And Mdump2 images may have sectors stored out of sequence.

Sector Header

$00	1 byte	Sector header flag $FF
$01	1 byte	Sector number
$02	10 bytes	Cartridge name
$0C	2 bytes	Random number

Block Header

$0E	1 byte	File number
$0F	1 byte	Block number

Data Block

$10	512 bytes	Data
$210	2 bytes	Checksum (only Mdump2, 'wrong' way round MSB first)

Bad sector buffer Mdump2 only

The Dump type/extension entry ($20), in the image header is a pointer to

$00	4 bytes	Pointer to next extensions (or null)
$04	4 bytes	ID "MBAD"
$08	4 bytes	Pointer to start of bad cache
$0C	2 bytes	Number of buffered bad sectors

Format of Qlay .MDV images

The image file is made up of 255 sectors of 686 bytes (174,930 bytes) composed as follows -

Sector Format
The first sector is sector 0 (map) followed by sectors in ascending, or descending order. And may also be out of sequence.

			Unused (bad sectors)
Sector Header			
$000	10 bytes	Sector header preamble, 10 * $00	
$00A	2 bytes	Sector header preamble, $FFFF	
$00C	1 byte	Sector header flag $FF	$00
$00D	1 byte	Sector number	$00
$00E	10 bytes	Cartridge name	10 * $00
$018	2 bytes	Random number	$0000
$01A	2 bytes	Checksum	$0F0F
Block Header			
$01C	10 bytes	Block header preamble, 10 * $00	
$026	2 bytes	Block header preamble, $FFFF	
$028	1 byte	File number	$00
$029	1 byte	Block number	$00
$02A	2 bytes	Checksum	$0F0F
Data Block			
$02C	6 bytes	Data preamble, 6 * $00	
$032	2 bytes	Data preamble, $FFFF	
$034	512 bytes	Data	512 * $00
$234	2 bytes	Checksum	$0F0F
$236	120 bytes	Inter sector gap, 120 * $5A	
$2AE		End	

Format of MDI image files

The MDI image file is made up of 255 sectors of 534 bytes (136,170 bytes) composed as follows -

Sector Format
The first sector is sector 0 (map) followed by sectors in ascending order.

Sector Header

$00	1 byte	Sector header flag $FF
$01	1 byte	Sector number
$02	10 bytes	Cartridge name
$0C	2 bytes	Random number
$0E	2 bytes	Checksum

Block Header

$10	1 byte	File number
$11	1 byte	Block number
$12	2 bytes	Checksum

Data Block

$14	512 bytes	Data
$214	2 bytes	Checksum

Any sectors marked as bad in the map, may not contain valid sector data.

General Microdrive Information

The tape is split up into sectors containing 512 bytes of data.

Sector Format

Sector Header 16 bytes	Block Header 4 bytes	Data block 512 bytes

Total 534 bytes ($216)

Checksums
1. Preset the checksum to $0F0F
2. For each byte, add the byte to the checksum. Throw away any overflow of 16 bits.
3. Record the checksum, low byte first, then the high byte.

Sector Header

$00	1 byte	Sector header flag $FF
$01	1 byte	Sector number
$02	10 bytes	Cartridge name
$0C	2 bytes	Random number
$0E	2 bytes	Checksum

Block Header

$10	1 byte	File number
$11	1 byte	Block number
$12	2 bytes	Checksum

Data Block

$14	512 bytes	Data
$214	2 bytes	Checksum

Special Blocks

The map
Sector 0 is the map. File number $F8, Block 0 (F800 in map). Note the map could also be $8000

The map contains 255 (0 to 254) pairs of bytes. Each pair contains the file number of the file occupying that sector, plus the block number within that file.

01 | 00	01 | 01	FD | 00	FF | 00
File 1 Block 0	File 1 Block 1	Vacant Block	Bad Block

The last byte of pair 255, of the sector map block contains the number of the most recently allocated sector.

File numbers	Use
0	Directory.
1 - 240 ($F0)	Ordinary files. See map entry below.
241 - 247 ($F1 - $F7)	Undefined.
248 ($F8)	Microdrive map. Note the map could also be $80.
249 - 252 ($F9 - $FC)	Undefined.
253 ($FD)	Good vacant block.
254 ($FE)	Bad block, failed verify.
255 ($FF)	Bad block.

The Directory

File 0 holds copies of the file headers. Each block of the directory holds 8 file headers.

Directory entries are 64 bytes for each file

$00 Length of the file including the file header.
$04 10 * zero.
$0E Filename length.
$10 36 bytes of filename.
$34 12 * zero.

Sector structure suggests the maximum cartridge size is 236 sectors (120,832 bytes, or 118K bytes).

If there are less than 200 good blocks on format, Then the format will fail.