                  Rapicom 450 Facsimile File Format

Introduction:

Several organizations in the ARPA Internet community have RAPICOM 450
facsimile machines interfaced to computers.   This allows these
organizations to enter a facsimile representation of a page into a
computer file, and to produce a page from stored facsimile data.   These
organizations can exchange stored facsimile data via file transfer and
other protocols.   The purpose of this note is to document the format
used for these files so that other organizations with compatible
facsimile devices can join in this information exchange procedure.

The Rapicom 450:

The Rapicom 450 has a built in encoding/decoding scheme.   It produces
data blocks of 585 bits.   There are "set up" blocks and "data" blocks.
The machine sends/receives several copies of the set up block, but since
they are identical only one set up block is stored in the file.

Records:

Each 585 bit block is placed in a record of 8-bit bytes. The record
format is a length byte, a command byte and the data bytes. Each record
is an integral number of bytes.   The length value includes the length
byte and the command byte.   The command describes the data in the data
field.

     0   1   2   3   length
    +--------+--------+--------+--------+---//---+--------+--------+
    | length | command| data |
    +--------+--------+--------+--------+---//---+--------+--------+

                   Rapicom 450 Facsimile Record

Commands:

56 - SET-UP

  The command code 56 (70 octal) indicates the following data field is a
  set up block.

57 - DATA

   The command code 57 (71 octal) indicates the following data field is a
   data block.

58 - END

   The command code 58 (72 octal) indicates that this is the last record
   in the file.   In this case the length may be 2, indicating that there
   is no data in this record.

Conventions:

In the files exchanged to date, each record contains one block. This
means the data field is 74 bytes long (585/8=73.125), and the length
field has the value 76 (114 octal), except the last record which may
carry no data and have a length of 2.

The first record of a file is always a SET UP record, the following
records are DATA records, until the last record which is an END record.

Details:

The 585 bit data block is encoded by the Rapicom 450 and so can not be
used a bit map unless the encoding/decoding procedure is known and used.

The first 24 bits of the block is always a synchronization mark with the
value 271 141 344 in octal or 101110010110000111100100 in binary.

The low order two bits of the next byte contain a sequence number
(modulo 4).   The sequence number bits cycle in the order 11, 01, 10, 00,
starting with the first DATA record (not the SET UP record).

The line below represents a DATA record, where L represents a length
bit, C represents a command bit, M represents the synchronization mark,
S represents a sequence bit, F represents a fill bit, the dash
represents 68 other data octets, and an D represents a data bit.

LLLLLLLLCCCCCCCCMMMMMMMMMMMMMMMMMMMMMMMMDDDDDDSSDDDDDDDD-DFFFFFFF

In the line below the normal values have been filled in for the length,
the command, the synchronization mark and fill bits.

01001100001110011011100101100001111001000DDDDDDSSDDDDDDDD-D0000000