

# **Bankgiro Inbetalningar**

(Bankgiro Receivables)

Record and file description for Image file

January 2007

# 1 References

- [1] "TIFF Revision 6.0 (Final – June 3, 1992)", Adobe Developers Association, Adobe Systems Inc., Mountain View, CA, US, 1992, <http://partners.adobe.com/asn/tech/tiff/index.jsp>
- [2] "BgMax: filstruktur och postlayout", Bankgirot, Stockholm, 2004, [www.bankgirot.se](http://www.bankgirot.se).
- [3] "Facsimile coding schemes and coding control functions for Group 4 facsimile apparatus", section 2, CCITT Recommendation T.6, International Telephone and Telegraph Consultative Committee (CCITT), Geneva, 1988

## 2 Introduction

The image file can be used as a supplement to the BgMax file in Bankgirot Inbetalningar (Bankgirot Receivables). The image file can be used to link a payment in the BgMax file to an associated slip scan.

The aim of this document is to specify and describe the file format for image files from Bankgirot so that it is possible for parties on the market to implement or acquire software for using and processing image files from Bankgirot.

## 3 Image file

The image file contains scanned slip scans. It is possible to work on the basis of what is known as the BGC serial number (image number) in the BgMax file to link a form payment with an associated slip scan in the image file.

The image file is a MultiPage TIFF (see the TIFF specification [1]). The recipient of the image file has to be able to read and process TIFF files either by directly manipulating the images in the MultiPage TIFF file, or by first dividing the MultiPage TIFF file into individual TIFF files (or some other format) so as then to be able to process the images in the required manner.

### 3.1 Bankgirot's image file

The image file contains a sequence of Image File Directories, IFDs (see below, section 4.1.2). Each IFD describes a slip scan. An IFD contains a sequence of IFD records (see below, section 4.1.3) which contains information necessary in order to describe an image.

The IFD tag DocumentName is used to identify the payment recipient's bankgirot number. The bankgirot numbers of a number of recipients may appear in an image file.

The IFD tag PageName is used to identify each individual slip scan using a unique BGC serial number. This BGC serial number remains unique for two years.

The BGC serial number value identifies the electronic transaction (or electronic transactions) which the present slip scan has given rise to and can be found in the BGC serial number field in the payment and deduction records in the notification file in accordance with BgMaxformat [1]. The value of the IFD record PageName can be used as a filename (possibly adding an appropriate file extension) if the image file is divided up into one TIFF file per image.

The slip scans are coded in accordance with CCITT group IV [3], i.e. the IFD record Compression (tag: 0x103, field type: SHORT) is set to a value of 4 (0x04) or to a value of 1 (0x01) if the slip scan is uncompressed.

## 4 File format

This section describes the general file format. For detailed information, see the TIFF specification [1].

A TIFF file consists of a header (image file header), a list of information blocks (IFD, image file directory) and data. Each information block describes an image which is saved as data.

A MultiPage TIFF file is an ordinary TIFF file, but containing a list of information blocks instead of just one information block (IFD).

### 4.1.1 Header

The header starts off a TIFF file.

Table 1: TIFF 6.0 file header

Bytes	Description
0 – 1	Byte order in the file “MM” (0x4d4d)
2 – 3	Magic number (0x2a). The byte order depends on the value of bytes 0-1.
4 – 7	Offset to first IFD. The address of an IFD has to be divisible by exactly the word size.

### 4.1.2 Image File Directory (IFD)

An Image File Directory contains a sequence of IFD records. The records in an IFD have to be sorted in ascending order according to type (tag).

Table 2: The structure of an Image File Directory

Bytes	Description
0 – 1	Number of IFD records in this IFD.
2 – 13	First IFD record
14 – 25	Second IFD record
...	
$(12*N+2)$ -- $(12*N+13)$	IFD record number N
$12*(N+1)$ -- $(12*N+1)+3$	Offset to next IFD. Contains a value of zero (0x0) if this is the file's last IFD.

Each IFD describes a subfile or a subimage. Thus in the image file, each individual slip scan is described by one IFD per image.

### 4.1.3 IFD record

The value described by an IFD record is always a vector (possible of a length of one).

Table 3: The structure of an IFD record.

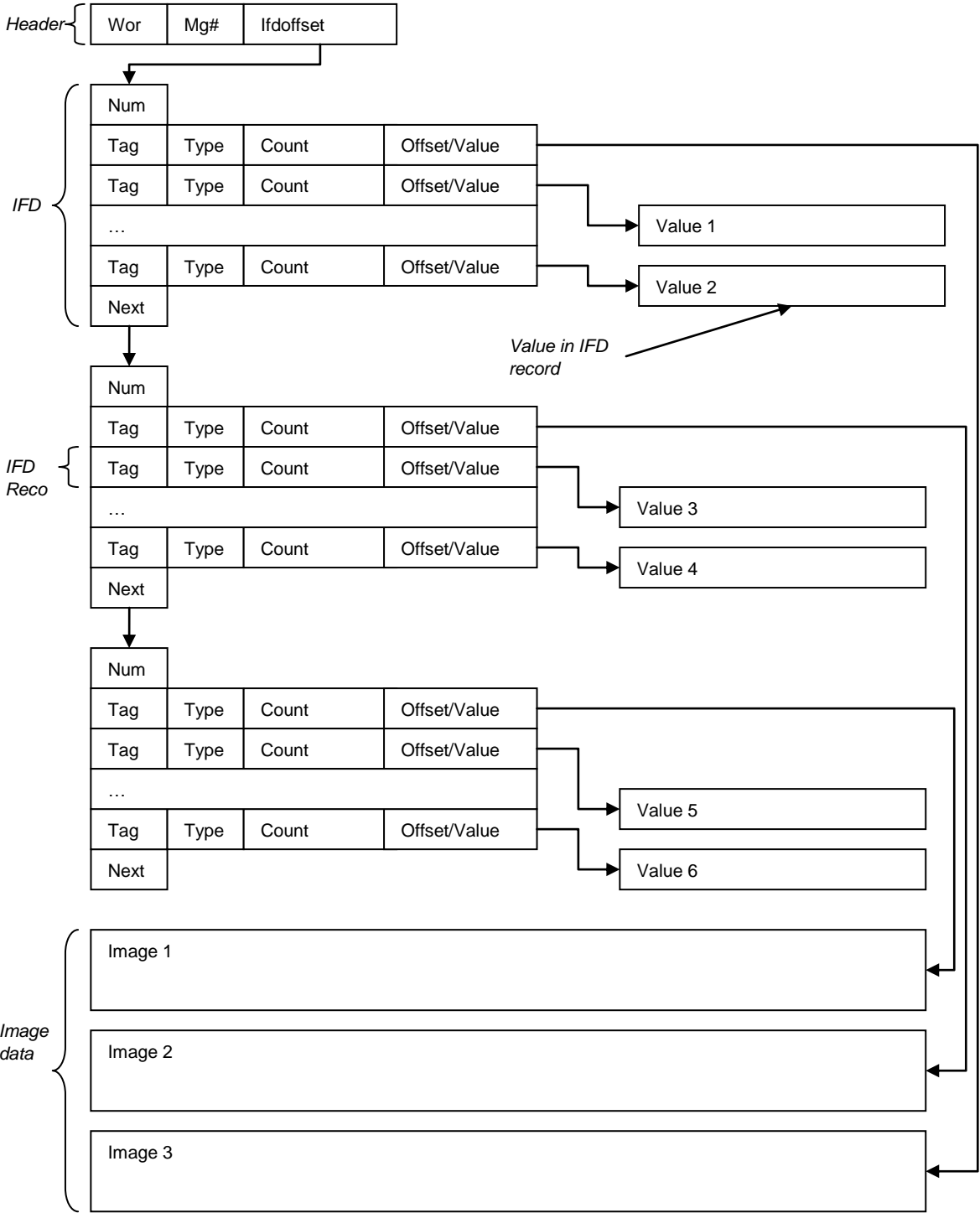
Bytes	Description
0 – 1	IFD record type (tag).
2 – 3	Indicates the type of values in the IFD record (data type).
4 – 7	Number of values of the indicated type in the IFD record.
8 – 11	If the value can be accommodated by four bytes, it will appear directly in bytes 8-11. If the value takes up more than four bytes, an offset* is used in bytes 8-11 which points to the value.

**N.B.:** Offsets are calculated in bytes from the start of the file.

### Structure of an image file

The illustration below provides a general description of the structure of an image file which is a MultiPage TIFF file. Note that IFDs and the values of IFD records, such as document names or the actual image data, may appear anywhere in the file, i.e. a TIFF reader cannot assume any particular order; the offset fields constitute pointers which have to be followed. Complete information is available in the specification for TIFF format [1].

# 5 Overview of a MultiPage TIFF



## 6 Description of included TIFF tags

The TIFF tags below describe each IFD per slip scan in an image file from Bankgirot.

Image file header

Type: Motorola Byte order "MM" (4D4D.H)

IFD: offset <offset to this IFD> - 23 tags

254/00FE	New Subfile Type	Long	1 =	2 One page of many
256/0100	Image Width	Long	1 =	<width>
257/0101	Image Length	Long	1 =	<length>
258/0102	Bits Per Sample	Short	1 =	1
259/0103	Compression	Short	1 =	4 CCITT Group-4 (eller 1 No compression)
262/0106	Photometric	Short	1 =	0 White is Zero
266/010A	Fill Order	Short	1 =	1 Fill bytes Left to Right
269/010D	Document Name	ASCII	36 =	<Bankgironummer>
273/0111	Strip Offsets	Long	1 =	<offset>
274/0112	Orientation	Short	1 =	1 R=Top C=Left
277/0115	Samples Per Pixel	Short	1 =	1
278/0116	Rows Per Strip	Long	1 =	<row count>
279/0117	Strip Byte Counts	Long	1 =	<byte count>
282/011A	X Resolution	Ratl.	1 =	200/1
283/011B	Y Resolution	Ratl.	1 =	200/1
284/011C	Planar Config	Short	1 =	1 Single image plane
285/011D	PageName	ASCII	13 =	<BGC-löpnr>
292/0124	Group 3 Options(T4)	Long	1 =	4 Fill to byte boundary
293/0125	Group 4 Options(T6)	Long	1 =	0
296/0128	Resolution Unit	Short	1 =	2 Inches
297/0129	Page Number	Short	2 =	<current page> <numberOfPages>
305/0131	Software	ASCII	16 =	CreateMultiTIFF
306/0132	Date Time	ASCII	20 =	2004-07-20 16:08:19
33432/8298	Copyright	ASCII	18 =	Bankgirocentralen

Next IFD at offset: <offset to next IFD or 0>

END OF FILE