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Abstract

This document is a reference of the format of the Nikon raw photography file.

THE NEF FORMAT

Format of the Nikon RAW implémentation

# Introduction

The .NEF format is Nikon proprietary file format [1]. It’s based on the TIFF specification. This document is based on reverse engineering of the D7200 NEF files.

# the baseline

## The header

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Offset** | **Length** | **Type** | **Description** | **Value** |
| 0x0000 | 1 | short | byte order | Usually 0x4D4D / "MM", except for E5700 ( 0x4949 / "II" ) |
| 0x0002 | 1 | short | TIFF magic value | 0x2a |
| 0x0004 | 1 | long | TIFF offset | 8 |
| 0x0008 |  | IFD | first IFD |  |

## The IFD 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag value** | **Name** | **Type** | **Length** | **Description** |
| 0x00fe / 254 | SubfileType | 4 | 1 | 1=Reduced-resolution image |
| 0x0100 / 256 | imageWidth | 4 | 1 | 160 |
| 0x0101 / 257 | ImageHeight | 4 | 1 | 120 |
| 0x0102 / 258 | BitsPerSample | 3 | 3 | [ 8, 8, 8 ] |
| 0x0103 / 259 | Compression | 3 | 1 | 1=uncompressed |
| ... | ... |  |  | ... |
| 0x014a / 330 | **SubIFD tag** | 4 | 2 | [ JpegImageOffset, RawOffset ] : offsets to the 2 child IFDs |
| 0x0214 / 34665 | ReferenceBlackWhite | 5=rational | 6 |  |
| 0x8769 / 34665 | **EXIF** | 4 | 1 | offset to the EXIF IFD. the EXIF IFD contains a pointer to the **Makernote** IFD |
| 0x9286 / 37510 | UserComment | 7 | variable |  |
| ... | ... |  |  | ... |

### SubIFD 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag value** | **Name** | **Type** | **Length** | **Description** |
| 0x00fe / 254 | SubfileType | 4 | 1 | 1=Reduced-resolution image |
| 0x0103 / 259 | Compression | 3 | 1 | 6=old/jpeg |
| 0x011a / 282 | XResolution | 5=rational | 1 | 300 |
| 0x011b / 283 | YResolution | 5 | 1 | 300 |
| 0x0128 / 296 | ResolutionUnit | 3 | 1 | 2=pixel\_per\_inch |
| 0x0201 / 513 | JpgFromRawStart | 4 | 1 | offset to image data |
| 0x0202 / 514 | JpgFromRawLength | 4 | 1 | image data length |
| 0x0213 / 531 | YCbCrPositioning | 3 | 1 | 2=co\_sited |

### SubIFD 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag value** | **Name** | **Type** | **Length** | **Description** |
| 0x00fe / 254 | SubfileType | 4 | 1 | 0=Full-resolution Image |
| 0x0100 / 256 | ImageWidth | 4 | 1 | 3904 for the D60 |
| 0x0101 / 257 | ImageHeight | 4 | 1 | 2616 for the D60 |
| 0x0102 / 258 | BitsPerSample | 1 | 1 | 12bits for the D60 |
| 0x0103 / 259 | Compression | 3 | 1 | 1=uncompressed,  34713=Nikon NEF Compressed |
| 0x0106 / 262 | PhotometricInterpretation | 3 | 1 | 32803=Color Filter Array |
| 0x0111 / 273 | JpgFromRawStart | 4 | 1 | offset to the image data |
| 0x0115 / 277 | SamplesPerPixel | 3 | 1 | 1 |
| 0x0116 / 278 | RowsPerStrip | 3 | 1 | 2616 for the D60 |
| 0x0117 / 279 | JpgFromRawLength | 4 | 1 | image data lenght |
| 0x011a / 282 | XResolution | 5=rational | 1 | 300 |
| 0x011b / 283 | YResolution | 5 | 1 | 300 |
| 0x011c / 284 | PlanarConfiguration | 3 | 1 | 1 = Chunky |
| 0x0128 / 296 | ResolutionUnit | 3 | 1 | 2=pixel\_per\_inch |
| 0x828d / 33421 | CFARepeatPatternDim | 3 | 2 | [2, 2] = 2x2 |
| 0x828e / 33422 | CFAPattern2 | 1 | 4 | [1, 2, 0, 1] = [G, B, R, G] for the D60 |
| 0x9217 / 37399 | SensingMethod | 3 | 1 | 2 = One-chip color area (D60) |

# References

|  |  |
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| [1] | «http://lclevy.free.fr/nef/,» lclevy, 2009. [En ligne]. Available: http://lclevy.free.fr/nef/. [Accès le 2016]. |