

## Annex A

### Image File Description Examples

#### A.1 Uncompressed RGB File

Table 32 Uncompressed RGB File Description Sample Contents

Primary Image	
Pixels	640 (W) x 480 (H)
Image Title	Exif_TIFF_RGB
Image Input Equipment Manufacturer	DSCcompany
Image Input Equipment Model Name	Example
Orientation	Normal
Strips	96
Lines per Strip	5
Bytes per Strip	9600
Image Resolution	72 dpi (Width), 72 dpi (Length)
Image Data Arrangement	Chunky
File Change Date and Time	1997:09:01 12:00:00.000
Copyright	Copyright, ABCDE,1997
Exif-specific Information	
Version	Ver. 2.0
Date and Time of Original Image Creation	1997:09:01 12:00:00.000
Date and Time of File Creation	1997:09:01 12:00:00.000
Thumbnail	
Pixels	80 (W) x 60 (H)
Orientation	Normal
Strips	1
Lines per Strip	60
Bytes per Strip	14400
Image Resolution	72 dpi (Width), 72 dpi (Length)

Table 33 Uncompressed RGB File Description Sample

Header	Offset (Hex)	Name	Data (Hex or "ASCII")			
	0000	Byte Order	4D4D ("MM" )			
	0002	42	002A			
	0004	0th IFD Offset	00000008			
0th IFD	Offset (Hex)	Name	Interoperability Number (Hex)			
	0008	Number of Interoperability	0014			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	000A	ImageWidth	0100	0004	00000001	00000280
	0016	ImageLength	0101	0004	00000001	000001E0
	0022	BitsPerSample	0102	0003	00000003	000000FE
	002E	Compression	0103	0003	00000001	00010000
	003A	PhotometricInterpretation	0106	0003	00000001	00020000
	0046	ImageDescription	010E	0002	0000000E	00000104
	0052	Make	010F	0002	00000009	00000112
	005E	Model	0110	0002	00000008	0000011C
	006A	StripOffsets	0111	0004	00000060	00000124
	0076	Orientation	0112	0003	00000001	00010000
	0082	SamplesPerPixel	0	0003	00000001	00030000
	008E	RowsPerStrip	0116	0004	00000001	00000005
	009A	StripByteCounts	0117	0004	00000060	000002A4
	00A6	XResolution	011A	0005	00000001	00000424
	00B2	YResolution	011B	0005	00000001	0000042C
	00BE	PlanarConfiguration	011C	0003	00000001	00010000
	00CA	ResolutionUnit	0128	0003	00000001	00020000
	00D6	DateTime	0132	0002	00000014	00000434
	00E2	Copyright	8298	0002	00000015	00000484
	00EE	Exif IFD Pointer	8769	0004	00000001	0000045E
	Offset (Hex)	Name	Offset (Hex)			
	00FA	Next IFD Offset	000004EC			
Value longer than 4byte of 0th IFD	Offset (Hex)	Name	Data (Hex or "ASCII")			
	00FE	BitPerSample Value	000800080008			
	0104	ImageDescription Value	"Exif_TIFF_RGB"00			
	0112	Make Value	"DSCompany"00			
	011C	Model Value	"Example"00			
	0124	StripOffsets Value	offset0,offset1,offset2.....offset95			
	02A4	StripByteCounts Value	count0, count1, count2.....count95			
	0424	XResolution Value	0000004800000001			
	042C	YResolution Value	0000004800000001			
	0434	DateTime Value	"1997:09:01 12:00:00"00			
	0448	Copyright Value (Last Byte is Padded)	"Copyright,ABCDE,1997"0000			
Exif IFD	Offset (Hex)	Name	Interoperability Number (Hex)			
	045E	Exif IFD Number	0008			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	0460	ExifVersion	9000	0007	00000004	"0200"
	046C	DateTimeOriginal	9003	0002	00000014	000004C4
	0478	DateTimeDigitized	9004	0002	00000014	000004D8
	0484	SubSecTime	9290	0002	00000004	"000"00
	0490	SubSecTimeOriginal	9291	0002	00000004	"000"00
	049C	SubSecTimeDigitized	9292	0002	00000004	"000"00
	04A8	FlashpixVersion	A000	0007	00000004	"0100"

	04B4	Colorspace	A001	0003	00000001	0001
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	04C0	Next IFD Offset	00000000			
<b>Value longer than 4byte of Exif IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	04C4	SubSecTimeOriginal Value	"1997:09:01 12:00:00"00			
	04D8	SubSecTimeDigitized Value	"1997:09:01 12:00:00"00			
<b>1st IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Interoperability Number (Hex)</b>			
	04EC	Number Of Interoperability	000D			
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Tag ID (Hex)</b>	<b>Type (Hex)</b>	<b>Count (Hex)</b>	<b>ValueOffset (Hex)</b>
	04EE	ImageWidth	0100	0004	00000001	00000050
	04FA	ImageLength	0101	0004	00000001	0000003C
	0506	BitsPerSample	0102	0003	00000003	0000058E
	0512	Compression	0103	0003	00000001	00010000
	051E	PhotometricInterpretation	0106	0003	00000001	00020000
	052A	StripOffsets	0111	0004	00000001	000005A4
	0536	SamplesPerPixel	011	0003	00000001	00030000
	0542	RowsPerStrip	0116	0004	00000001	0000003C
	054E	StripByteCounts	0117	0004	00000001	00003840
	055A	XResolution	011A	0005	00000001	00000594
	0566	YResolution	011B	0005	00000001	0000059C
	0572	PlanarConfiguration	011C	0003	00000001	00010000
	057E	ResolutionUnit	0128	0003	00000001	00020000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	058A	Next IFD Offset	00000000			
<b>Value longer than 4byte of 1st IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	058E	BitPerSample Value	000800080008			
	0594	XResolution Value	0000004800000001			
	059C	YResolution Value	0000004800000001			
	05A4	Thumbnail Image Data Strip	:			
<b>Primary Image</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	3DE4	Primary Image Data Strip0	:			
	6364	Primary Image Data Strip1	:			
	:	:	:			
	:	:	:			
	0E2864	Primary Image Data Strip95	:			

**A.2 Uncompressed YCbCr File**

Table 34 Uncompressed YCbCr File Description Sample Contents

Primary Image	
Pixels	640 (W) x 480 (H)
Image Title	Exif_TIFF_YCC
Image Input Equipment Manufacturer	DSCompany
Image Input Equipment Model Name	Example
Orientation	Normal
Strips	69
Lines per Strip	7
Bytes per Strip	8960
Image Resolution	72 dpi (Width), 72 dpi (Length)
Image Data Arrangement	Chunky
File Change Date and Time	1997:09:01 12:00:00
Pixel Composition	Subsampling = 4:2:2 Chrominance Subsampling point matches luminance point
Copyright	Copyright, ABCDE,1997
Exif-specific Information	
Version	Ver. 2.0
Date and Time of Original Image Creation	1997:09:01 12:00:00
Date and Time of File Creation	1997:09:01 12:00:00
Shutter Speed	59/10 (equivalent to 1/60 sec.)
Aperture	50/10 (equivalent to F:5.6)
Brightness	80/10
Exposure Bias	0/0
Maximum Lens Aperture	200/10
Subject Distance	20/10
Metering Mode	MultiSpot
Light Source	Daylight
Flash ON/OFF	ON
GPS Information	
Version	Ver. 2.0
Measurement Position	North Latitude 35 deg. 48 min. 8 sec., East Longitude 139 deg. 34 min. 55 sec.
Altitude	30.48 meters above sea level
GPS Time	0:00:00
GPS Receiver Movement	Moving at 1km/h at 0 deg. true direction
Image Direction	0 deg. true direction
Geodetic Data Used for Measurement	TOKYO
Thumbnail	
Pixels	80 (W) x 60 (H)
Orientation	Normal
Strips	1
Lines per Strip	60
Bytes per Strip	9600
Image Resolution	72 dpi (Width), 72 dpi (Length)

Table 35 Uncompressed YCbCr File Description Sample

Header	Offset (Hex)	Name	Data (Hex or "ASCII")			
	0000	Byte Order	4D4D ("II")			
	0002	42	2A00			
	0004	0th IFD Offset	08000000			
0th IFD	Offset (Hex)	Name	Interoperability Number (Hex)			
	0008	Number of Interoperability	1700			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	000A	ImageWidth	0001	0400	01000000	80020000
	0016	ImageLength	0101	0400	01000000	E0010000
	0022	BitsPerSample	0201	0300	03000000	22010000
	002E	Compression	0301	0300	01000000	01000000
	003A	PhotometricInterpretation	0601	0300	01000000	06000000
	0046	ImageDescription	0E01	0200	0E000000	28010000
	0052	Make	0F01	0200	09000000	36010000
	005E	Model	1001	0200	08000000	40010000
	006A	StripOffsets	1101	0400	45000000	48010000
	0076	Orientation	1201	0300	01000000	01000000
	0082	SamplesPerPixel	1501	0300	01000000	03000000
	008E	RowsPerStrip	1601	0400	01000000	07000000
	009A	StripByteCounts	1701	0400	45000000	5C020000
	00A6	XResolution	1A01	0500	01000000	70030000
	00B2	YResolution	1B01	0500	01000000	78030000
	00BE	PlanarConfiguration	1C01	0300	01000000	01000000
	00CA	ResolutionUnit	2801	0300	01000000	02000000
	00D6	DateTime	3201	0200	14000000	80030000
	00E2	YCbCrSubSampling	1202	0300	02000000	02000100
	00EE	YCbCrPositioning	1302	0300	01000000	02000000
	00FA	Copyright	9882	0200	15000000	94030000
	0106	Exif IFD Pointer	6987	0400	01000000	AA030000
	0112	GPS IFD Offset	2588	0400	01000000	10050000
Value longer than 4byte of 0th IFD	Offset (Hex)	Name	Offset (Hex)			
	011E	Next IFD Offset	7E060000			
	Offset (Hex)	Name	Data (Hex or "ASCII")			
	0122	BitPerSample Value	080008000800			
	0128	ImageDescription Value	"Exif_TIFF_YCC"00			
	0136	Make Value	"DSCCompany"00			
	0140	Model Value	"Example"00			
	0148	StripOffsets Value	(offset0,offset1,offset2.....offset95)			
	025C	StripByteCounts Value	(count0, count1, count2.....count95)			
	0370	XResolution Value	4800000001000000			
	037C	YResolution Value	4800000001000000			
	0380	DateTime Value	"1997:09:01 12:00:00"00			
Exif IFD	0394	Copyright Value (Last Byte is Padded)	"Copyright,ABCDE,1997"0000			
	Offset (Hex)	Name	Interoperability Number (Hex)			
	03AA	Exif IFD Number	1400			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	03AC	ExposureTime	9A82	0500	01000000	A0040000
	03B8	FNumber	9D82	0500	01000000	A8040000
	03C4	ExifVersion	0090	0700	04000000	"0200"
	03D0	DateTimeOriginal	0390	0200	14000000	B0040000

	03DC	DateTimeDigitized	0490	0200	14000000	C4040000
	03E8	ShutterSpeedValue	0192	0A00	01000000	D8040000
	03F4	ApertureValue	0292	0500	01000000	E0040000
	0400	BrightnessValue	0392	0A00	01000000	E8040000
	040C	ExposureBiasValue	0492	0A00	01000000	F0040000
	0418	MaxApertureRatioValue	0592	0500	01000000	F8040000
	0424	SubjectDistance	0692	0500	01000000	00050000
	0430	MeteringMode	0792	0300	01000000	01000000
	043C	LightSource	0892	0300	01000000	01000000
	0448	Flash	0992	0300	01000000	01000000
	0454	FocalLength	0A92	0500	01000000	08050000
	0460	SubSecTime	9092	0200	04000000	"000"00
	046C	SubSecTimeOriginal	9192	0200	04000000	"000"00
	0478	SubSecTimeDigitized	9292	0200	04000000	"000"00
	0484	FlashpixVersion	A000	0700	04000000	"0100"
	0490	ColorSpace	A001	0300	01000000	01000000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	049C	Next IFD Offset	00000000			
<b>Value longer than 4 Bytes of Exif IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	04A0	ExposureTime Value	010000003C000000			
	04A8	FNumber Value	0400000001000000			
	04B0	DateTimeOriginal Value	"1997:09:01 12:00:00"00			
	04C4	DateTimeDigitized Value	"1997:09:01 12:00:00"00			
	04D8	ShutterSpeed Value	0600000001000000			
	04E0	ApertureValue Value	0400000001000000			
	04E8	BrightnessValue Value	0000000001000000			
	04F0	ExposureBiasValue Value	0000000001000000			
	04F8	MaxApertureRatio Value	0100000001000000			
<b>GPS IFD</b>	0500	SubjectDistance Value	0F0000000A000000			
	0508	FocalLength Value	3200000001000000			
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Interoperability Number (Hex)</b>			
	0510	GPS IFD Number	0013			
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Tag ID (Hex)</b>	<b>Type (Hex)</b>	<b>Count (Hex)</b>	<b>ValueOffset (Hex or "ASCII")</b>
	0512	GPSTimeStamp	0000	0100	04000000	02000000
	051E	GPSLatitudeRef	0100	0200	02000000	"N"000000
	052A	GPSLatitude	0200	0500	03000000	FA050000
	0536	GPSLongitudeRef	0300	0200	02000000	"E"000000
	0542	GPSLongitude	0400	0500	03000000	12060000
	054E	GPSAltitudeRef	0500	0100	01000000	00000000
	055A	GPSAltitude	0600	0500	01000000	2A060000
	0566	GPSTimeStamp	0700	0500	03000000	32060000
	0572	GPSSatellites	0800	0200	0D000000	4A060000
	057E	GPSStatus	0900	0200	02000000	"A"000000
	058A	GPSMeasureMode	0A00	0200	02000000	"2"000000
	0596	GPSDOP	0B00	0500	01000000	58060000
	05A2	GPSSpeedRef	0C00	0200	02000000	"K"000000
	05AE	GPSSpeed	0D00	0500	01000000	60060000
	05BA	GPSTrackRef	0E00	0200	02000000	"T"000000
	05C6	GPSTrack	0F00	0500	01000000	68060000
	05D2	GPSImgDirectionRef	1000	0200	02000000	"T"000000
	05DE	GPSImgDirection	1100	0500	01000000	70060000
	05EA	GPSMapDatum	1200	0200	06000000	78060000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	05F6	Next IFD Offset	00000000			

Value longer than 4 Bytes of GPS IFD	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	05FA	GPSLatitude Value	230000000100000030000000010000000800000001000000			
	0612	GPSTLongitude Value	8B0000000100000022000000010000003700000001000000			
	062A	GPSAltitude Value	E80B000064000000			
	0632	GPSTimeStamp Value	000000000100000000000000010000000000000001000000			
	064A	GPSSatellites Value (Last Byte is padded)	"2,7,14,15,16"0000			
	0658	GPSDOP Value	0100000001000000			
	0660	GPSSpeed Value	0000000001000000			
	0668	GPSTrack Value	0000000001000000			
	0670	GPSImgDirection Value	0000000001000000			
	0678	GPSMapDatum Value	"TOKYO"00			
1st IFD	<b>Offset (Hex)</b>	<b>Name</b>	<b>Interoperability Number (Hex)</b>			
	067E	Number Of Interoperability	0F00			
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Tag ID (Hex)</b>	<b>Type (Hex)</b>	<b>Count (Hex)</b>	<b>ValueOffset (Hex or "ASCII")</b>
	0680	ImageWidth	0001	0400	01000000	50000000
	068C	ImageLength	0101	0400	01000000	3C000000
	0698	BitsPerSample	0201	0300	03000000	38070000
	06A4	Compression	0301	0300	01000000	01000000
	06B0	PhotometricInterpretation	0601	0300	01000000	06000000
	06BC	StripOffsets	1101	0400	01000000	4E070000
	06C8	SamplesPerPixel	1501	0300	01000000	03000000
	06D4	RowsPerStrip	1601	0400	01000000	3C000000
	06E0	StripByteCounts	1701	0400	01000000	80250000
	06EC	XResolution	1A01	0500	01000000	3E070000
	06F8	YResolution	1B01	0500	01000000	46070000
	0704	PlanarConfiguration	1C01	0300	01000000	01000000
	0710	ResolutionUnit	2801	0300	01000000	02000000
	071C	YCbCrSubSampling	1202	0300	02000000	02000100
	0728	YCbCrPositioning	1302	0300	01000000	02000000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	0734	Next IFD Offset	00000000			
Value longer than 4byte of 1st IFD	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	0738	BitPerSample Value	080008000800			
	073E	XResolution Value	4800000001000000			
	0746	YResolution Value	4800000001000000			
	074E	(Thumbnail Image Data Strip)				
Primary Image Data	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	2CCE	Image Data Strip0	:			
	4FCE	Image Data Strip1	:			
	:	:	:			
	:	:	:			
	0978CE	Image Data Strip68	:			

**A.3 JPEG Compressed (4:2:2) File**

Table 36 JPEG Compressed (4:2:2) File Description Sample Contents

Primary Image	
Recording Format	JPEG
Subsampling	YCC 4:2:2
Restart Markers	Inserted
Quantization Tables	3
Pixels	640 (W) x 480 (H)
Image Title	Exif_JPEG_422
Image Input Equipment Manufacturer	DS Company
Image Input Equipment Model Name	Example
Orientation	Normal
Image Resolution	72 dpi (Width), 72 dpi (Length)
File Change Date and Time	1997:09:01 12:00:00
Copyright	Copyright, ABCDE,1997
Exif-specific Information	
Version	Ver. 2.0
Date and Time of Original Image Creation	1997:09:01 12:00:00
Date and Time of File Creation	1997:09:01 12:00:00
Components	Y,Cb,Cr
Image Compression Mode	2bit/pel
Shutter Speed	59/10 (equivalent to 1/60 sec.)
Aperture	50/10 (equivalent to F:5.6)
Brightness	80/10
Exposure Bias	0/0
Maximum Lens Aperture	200/10
Subject Distance	20/10
Metering Mode	MultiSpot
Light Source	Daylight
Flash ON/OFF	ON
Thumbnails	
Recording Format	JPEG
Subsampling	YCC 4:2:2
Pixels	80 (W) x 60 (H)
Image Resolution	72 dpi (Width), 72 dpi (Length)

Table 37 JPEG Compressed (4:2:2) File JPEG Stream Description Sample

Offset (Hex)	Maker Segment	Name	Code (Hex)	Comment
0000	SOI	SOI Marker	FFD8	Start of Image
0002	APP1	APP1 Marker	FFE1	See Next Table
0004		APP1 Length	291C	
0006		Identifier	"Exif"00	
000B		Pad	00	
000C		APP1 Body		
0E39	DQT	DQT Marker	FFDB	Define Quantization Table
0E3B		DQT Length	00C5	64 Bytes of Data
0E3D		Pq, Tq	00	
0E3E		table elements	100B0C0E.....	64 Bytes of Data
0E7E		Pq,Tq	01	
0E7F		table elements	0F101016....	64 Bytes of Data
0EBF		Pq,Tq	02	
0EC0		table elements	0F101016....	64 Bytes of Data



0F00	DHT	DHT Marker	FFC4	Table 0 for DC
0F02		DHT Length	01A2	
0F04		Th	00	
0F05		Li	00010501....	
0F15		Vij	00010203....	Table 0 for AC
0F21		Th	10	
0F22		Li	00020103....	
0F32		Vij	01020300....	
0FD4		Th	01	Table 1 for DC
0FD5		Li	00030101....	
0FE5		Vij	00010203....	
0FF1		Th	11	
0FF2	DRI	Li	00020102....	Table 1 for AC
1002		Vij	00010203....	
10A4		DRI Marker	FFDD	
10A6	DRI	DRI Length	0004	
10A8		Ri	0004	
10AA				
10AC	SOF0	SOF0 Marker	FFC0	
10AE		SOF0 Length	0011	
10AF		P	08	
10B1		Y	01E0	
10B3		X	0280	
10B4		Nf	03	
10B5		C1	01	
10B6		H1,V1	21	
10B7		Tq1	00	
10B8		C2	02	
10B9		H2,V2	11	
10BA		Tq2	01	
10BB		C3	03	
10BC		H3,V3	11	
10BD	SOS	Tq3	02	
10BF		SOS Marker	FFDA	
10C1		SOS Length	000C	
10C2		Ns	03	
10C3		Cs1	01	
10C4		Td1,Ta1	00	
10C5		Cs2	02	
10C6		Td2,Ta2	11	
10C7		Cs3	03	
10C8		Td3,Ta3	11	
10C9		Ss	00	
10CA		Se	3F	
10CB		Ah,Al	00	
10CB	Image Data		F36A....	Compressed Data
111C4	EOI		FFD9	

Table 38 JPEG Compressed (4:2:2) File APP1 Description Sample

Header	Offset (Hex)	Name	Data (Hex or "ASCII")			
	0000	Byte Order	4D4D ("II")			
	0002	42	2A00			
	0004	0th IFD Offset	08000000			
0th IFD	Offset (Hex)	Name	Interoperability Number (Hex)			
	0008	Number of Interoperability	0B00			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	000A	ImageDescription	0E01	0200	0E000000	92000000
	0016	Make	0F01	0200	09000000	A0000000
	0022	Model	1001	0200	08000000	AA000000
	002E	Orientation	1201	0300	01000000	01000000
	003A	XResolution	1A01	0500	01000000	B2000000
	0046	YResolution	1B01	0500	01000000	BA000000
	0052	ResolutionUnit	2801	0300	01000000	02000000
	005E	DateTime	3201	0200	14000000	C2000000
	006A	YCbCrPositioning	1302	0300	01000000	02000000
	0076	CopyRight	9882	0200	15000000	D6000000
	0082	Exif IFD Pointer	6987	0400	01000000	EC000000
	Offset (Hex)	Name	Offset (Hex)			
	008E	Next IFD Offset	C402			
Value longer than 4byte of 0th IFD	Offset (Hex)	Name	Data (Hex or "ASCII")			
	0092	ImageDescription Value	"Exif_JPEG_422"00			
	00A0	Make Value	"DSCompany"00			
	00AA	Model Value	"Example"00			
	00B2	XResolution Value	4800000001000000			
	00BA	YResolution Value	4800000001000000			
	00C2	DateTime Value	"1997:09:01 12:00:00"00			
Exif IFD	00D6	Copyright Value (Last Byte is Padded)	"Copyright,ABCDE,1997"0000			
	Offset (Hex)	Name	Interoperability Number (Hex)			
	00EC	Exif IFD Number	1900			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	00EE	ExposureTime	9A82	0500	01000000	1E020000
	00FA	FNumber	9D82	0500	01000000	26020000
	0106	ExifVersion	0090	0700	04000000	"0200"
	0112	DateTimeOriginal	0390	0200	14000000	2E020000
	011E	DateTimeDigitized	0490	0200	14000000	42020000
	012A	ComponentsConfiguration	0191	0700	04000000	01020000
	0136	CompressedBitsPerPixel	0292	0500	01000000	56020000
	0142	ShutterSpeedValue	0192	0A00	01000000	5E020000
	014E	ApertureValue	0292	0500	01000000	66020000
	015A	BrightnessValue	0392	0A00	01000000	6E020000
	0166	ExposureBiasValue	0492	0A00	01000000	76020000
	0172	MaxApertureRatioValue	0592	0500	01000000	7E020000
	017E	SubjectDistance	0692	0500	01000000	86020000
	018A	MeteringMode	0792	0300	01000000	01000000
	0196	LightSource	0892	0300	01000000	01000000
	01A2	Flash	0992	0300	01000000	00000000
	01AE	FocalLength	0A92	0500	01000000	8E020000
	01BA	UserComments	8692	0700	2E000000	96020000
	01C6	SubSecTime	9092	0200	04000000	"000"00

	01D2	SubSecTimeOriginal	9192	0200	04000000	"000"00
	01DE	SubSecTimeDigitized	9292	0200	04000000	"000"00
	01EA	FlashpixVersion	A000	0700	04000000	"0100"
	01F6	Colorspace	A001	0300	01000000	01000000
	0202	Pixel X Dimension	A002	0400	01000000	80020000
	020E	Pixel Y Dimension	A003	0400	01000000	E0010000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	021A	Next IFD Offset	00000000			
<b>Value longer than 4 Bytes of Exif IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	021E	ExposureTime Value	010000003C000000			
	0226	FNumber Value	0400000001000000			
	022E	DateTimeOriginal Value	"1997:09:01 12:00:00"00			
	0242	DateTimeDigitized Value	"1997:09:01 12:00:00"00			
	0256	CompressedBitsPerPixel Value	0200000001000000			
	025E	ShutterSpeedValue Value	0600000001000000			
	0266	ApertureValue Value	0400000001000000			
	026E	BrightnessValue Value	0000000001000000			
	0276	ExposureBiasValue Value	0000000001000000			
	027E	MaxApertureRatioValue Value	0100000001000000			
	0286	SubjectDistance Value	0F0000000A000000			
	028E	FocalLength Value	3200000001000000			
	0296	UserComment Value (46 Bytes)	4A49530000000000....			
<b>1st IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Interoperability Number (Hex)</b>			
	02C4	Number Of Interoperability	0700			
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Tag ID (Hex)</b>	<b>Type (Hex)</b>	<b>Count (Hex)</b>	<b>ValueOffset (Hex or "ASCII")</b>
	02C6	Compression	0301	0300	01000000	01000000
	02D2	XResolution	1A01	0500	01000000	1E030000
	02DE	YResolution	1B01	0500	01000000	26030000
	02EA	ResolutionUnit	2801	0300	01000000	02000000
	02F6	JPEGInterchangeFormat	0102	0400	01000000	2D0E0000
	0302	JPEGInterchangeFormatLength	0202	0400	01000000	FF0A0000
	030E	YCbCrPositioning	1302	0300	01000000	02000000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	031A	Next IFD Offset	00000000			
<b>Value longer than 4byte of 1st IFD</b>	<b>Offset (Hex)</b>	<b>Data (Hex or "ASCII")</b>	<b>Name</b>			
	031E	4800000001000000	XResolution Value			
	0326	4800000001000000	YResolution Value			
<b>Thumbnail Image Data</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data</b>			
	032E	Thumbnail Data	(JPEG Stream)			

**A.4 JPEG Compressed (4:2:0) File**

Table 39 JPEG Compressed (4:2:0) File Description Sample Contents

Primary Image	
Recording Format	JPEG
Subsampling	YCC 4:2:0
Restart Markers	Inserted
Quantization Tables	2
Pixels	620 (W) x 475 (H)
Image Title	620x475
SOF Recorded Pixels	640x475
DCT Data	640x480
Image Title	Exif_JPEG_420
Image Input Equipment Manufacturer	DSCcompany
Image Input Equipment Model Name	Example
Orientation	Normal
Image Resolution	72 dpi (Width), 72 dpi (Length)
File Change Date and Time	1997:09:01 12:00:00
Copyright	Copyright, ABCDE,1997
Exif-specific Information	
Version	Ver. 2.0
Date and Time of Original Image Creation	1997:09:01 12:00:00
Date and Time of File Creation	1997:09:01 12:00:00
Components	Y,Cb,Cr
Image Compression Mode	2bit/pel
Shutter Speed	59/10 (equivalent to 1/60 sec.)
Aperture	50/10 (equivalent to F:5.6)
Brightness	80/10
Exposure Bias	0/0
Maximum Lens Aperture	200/10
Subject Distance	20/10
Metering Mode	MultiSpot
Light Source	Daylight
Flash ON/OFF	ON
Thumbnails	
Recording Format	TIFF
Subsampling	YCC 4:2:0
Pixels	80x60
Image Resolution	72 dpi (Width), 72 dpi (Length)

Table 40 JPEG Compressed (4:2:0) File JPEG Stream Description Sample

Offset (Hex)	Maker Segment	Name	Code (Hex)	Comment
0000	SOI	SOI Marker	FFD8	Start of Image
0002	APP1	APP1 Marker	FFE1	See Next Table
0004		APP1 Length	1FBC	
0006		Identifier	"Exif"00	
000B		Pad	00	
000C		APP1 Body		
1FC0	DQT	DQT Marker	FFDB	Define Quantization Table
1FC2		DQT Length	0084	64 Bytes of Data
1FC4		Pq, Tq	00	
1FC5		table elements	08060607....	
2005		Pq,Tq	01	

2006		table elements	0909090C....	64 Bytes of Data
2046	DHT	DHT Marker	FFC4	Table 0 for DC
2048		DHT Length	01A2	
204A		Th	00	
204B		Li	00010501....	
205B		Vij	00010203....	Table 0 for AC
2067		Th	10	
2068		Li	00020103....	
2078		Vij	01020300....	
211A		Th	01	Table 1 for DC
211B		Li	00030101....	
212B		Vij	00010203....	
2137		Th	11	
2138		Li	00020102....	Table 1 for AC
2148		Vij	00010203....	
21EA	DRI	DR Marker	FFDD	
21EC		DRI Length	0004	
21EE		Ri	0004	
21F0	SOF0	SOF0 Marker	FFC0	
21F2		SOF0 Length	0011	
21F4		P	08	
21F5		Y	01DB	
21F7		X	0280	
21F9		Nf	03	
21FA		C1	01	
21FB		H1,V1	22	
21FC		Tq1	00	
21FD		C2	02	
21FE		H2,V2	11	
21FF		Tq2	01	
2200		C3	03	
2201		H3,V3	11	
2202		Tq3	01	
2203	SOS	SOS Marker	FFDA	
2205		SOS Length	000C	
2207		Ns	03	
2208		Cs1	01	
2209		Td1,Ta1	00	
220A		Cs2	02	
220B		Td2,Ta2	11	
220C		Cs3	03	
220D		Td3,Ta3	11	
220E		Ss	00	
220F		Se	3F	
2210		Ah,Al	00	
2211	Image Data		F9FE....	Compressed Data
13BA4	EOI		FFD9	

Table 41 JPEG Compressed (4:2:0) File APP1 Description Sample

Header	Offset (Hex)	Name	Data (Hex or "ASCII")			
	0000	Byte Order	4D4D ("II")			
	0002	42	2A00			
	0004	0th IFD Offset	08000000			
0th IFD	Offset (Hex)	Name	Interoperability Number (Hex)			
	0008	Number of Interoperability	0B00			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	000A	ImageDescription	0E01	0200	0E000000	92000000
	0016	Make	0F01	0200	09000000	A0000000
	0022	Model	1001	0200	08000000	AA000000
	002E	Orientation	1201	0300	01000000	01000000
	003A	XResolution	1A01	0500	01000000	B2000000
	0046	YResolution	1B01	0500	01000000	BA000000
	0052	ResolutionUnit	2801	0300	01000000	02000000
	005E	DateTime	3201	0200	14000000	C2000000
	006A	YCbCrPositioning	1302	0300	01000000	02000000
	0076	Copyright	9882	0200	15000000	D6000000
	0082	Exif IFD Pointer	6987	0400	01000000	EC000000
	Offset (Hex)	Name	Offset (Hex)			
	008E	Next IFD Offset	C402			
Value longer than 4byte of 0th IFD	Offset (Hex)	Name	Data (Hex or "ASCII")			
	0092	ImageDescription Value	"Exif_JPEG_420"00			
	00A0	Make Value	"DSCcompany"00			
	00AA	Model Value	"Example"00			
	00B2	XResolution Value	4800000001000000			
	00BA	YResolution Value	4800000001000000			
	00C2	DateTime Value	"1997:09:01 12:00:00"00			
	00D6	Copyright Value (Last Byte is Padded)	"Copyright,ABCDE,1997"0000			
Exif IFD	Offset (Hex)	Name	Interoperability Number (Hex)			
	00EC	Exif IFD Number	1900			
	Offset (Hex)	Name	Tag ID (Hex)	Type (Hex)	Count (Hex)	ValueOffset (Hex or "ASCII")
	00EE	ExposureTime	9A82	0500	01000000	1E020000
	00FA	FNumber	9D82	0500	01000000	26020000
	0106	ExifVersion	0090	0700	04000000	"0200"
	0112	DateTimeOriginal	0390	0200	14000000	2E020000
	011E	DateTimeDigitized	0490	0200	14000000	42020000
	012A	ComponentsConfiguration	0191	0700	04000000	01020300
	0136	CompressedBitsPerPixel	0292	0500	01000000	56020000
	0142	ShutterSpeedValue	0192	0A00	01000000	5E020000
	014E	ApertureValue	0292	0500	01000000	66020000
	015A	BrightnessValue	0392	0A00	01000000	6E020000
	0166	ExposureBiasValue	0492	0A00	01000000	76020000
	0172	MaxApertureRatioValue	0592	0500	01000000	7E020000
	017E	SubjectDistance	0692	0500	01000000	86020000
	018A	MeteringMode	0792	0300	01000000	01000000
	0196	LightSource	0892	0300	01000000	01000000
	01A2	Flash	0992	0300	01000000	00000000
	01AE	FocalLength	0A92	0500	01000000	8E020000
	01BA	UserComments	8692	0700	2E000000	96020000
	01C6	SubSecTime	9092	0200	04000000	30303000

	01D2	SubSecTimeOriginal	9192	0200	04000000	"000"00
	01DE	SubSecTimeDigitized	9292	0200	04000000	"000"00
	01EA	FlashpixVersion	A000	0700	04000000	"0100"
	01F6	ColorSpace	A001	0300	01000000	01000000
	0202	Pixel X Dimension	A002	0400	01000000	6C020000
	020E	Pixel Y Dimension	A003	0400	01000000	DB010000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	021A	Next IFD Offset	00000000			
<b>Value longer than 4 Bytes of Exif IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	021E	ExposureTime Value	0100000003C000000			
	0226	FNumber Value	04000000001000000			
	022E	DateTimeOriginal Value	"1997:09:01 12:00:00"00			
	0242	DateTimeDigitized Value	"1997:09:01 12:00:00"00			
	0256	CompressedBitsPerPixel Value	02000000001000000			
	025E	ShutterSpeedValue Value	06000000001000000			
	0266	ApertureValue Value	04000000001000000			
	026E	BrightnessValue Value	00000000001000000			
	0276	ExposureBiasValue Value	00000000001000000			
	027E	MaxApertureRatioValue Value	01000000001000000			
	0286	SubjectDistance Value	0F00000000A000000			
	028E	FocalLength Value	32000000001000000			
	0296	UserComment Value (46 Bytes)	4A49530000000000....			
<b>1st IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Interoperability Number (Hex)</b>			
	02C4	Number Of Interoperability	0F00			
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Tag ID (Hex)</b>	<b>Type (Hex)</b>	<b>Count (Hex)</b>	<b>ValueOffset (Hex or "ASCII")</b>
	02C6	ImageWidth	0001	0400	01000000	50000000
	02D2	ImageLength	0101	0400	01000000	3C000000
	02DE	BitsPerSample	0201	0300	03000000	7E030000
	02EA	Compression	0301	0300	01000000	01000000
	02F6	PhotometricInterpretation	0601	0300	01000000	06000000
	0302	StripOffsets	1101	0400	01000000	94030000
	030E	SamplesPerPixel	1501	0300	01000000	03000000
	031A	RowsPerStrip	1601	0400	01000000	3C000000
	0326	StripByteCounts	1701	0400	01000000	201C0000
	0332	XResolution	1A01	0500	01000000	84030000
	033E	YResolution	1B01	0500	01000000	8C030000
	034A	PlanarConfiguration	1C01	0300	01000000	01000000
	0356	ResolutionUnit	2801	0300	01000000	02000000
	0362	YCbCrSubSampling	1202	0300	02000000	02000200
	036E	YCbCrPositioning	1302	0300	01000000	02000000
	<b>Offset (Hex)</b>	<b>Name</b>	<b>Offset (Hex)</b>			
	037A	Next IFD Offset	00000000			
<b>Value longer than 4byte of 1st IFD</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	037E	BitsPerSample Value	080008000800			
	0384	XResolution Value	48000000001000000			
	038C	YResolution Value	48000000001000000			
<b>Thumbnail Image Data</b>	<b>Offset (Hex)</b>	<b>Name</b>	<b>Data (Hex or "ASCII")</b>			
	0394	Thumbnail Image Data Strip	:			