

Data formats for Alcatel Mobiles

Mobile Equipment / Server Protocol

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Version 5.0			
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0.1	15/10/01	Creation
0.2	15/10/01	Take into account the remarks about the version 0.1
0.3	09/11/01	Take into account the remarks about the version 0.2
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1.0	27/11/01	Released version
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5.0	05/07/02	Remark from version 4.2 Released version

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1 Introduction

1.1 Goal

This document aims to define the format of the data to be downloaded on Alcatel mobiles

The different data types are :

1. 5 types of melodies
 - iMelody : standard format for buzzer melody (as defined in EMS protocol)
 - iAlcatel : Alcatel format for buzzer melody. This format is similar to iMelody except it is a lot more compressed (100% compression ratio) and it offers richer features.
 - MSEQ : Alcatel format for polyphonic, multi-instruments melody
 - VOX : Alcatel proprietary format for sampled melody
 - MIDI: standard format
2. 2 types of pictures
 - Alcatel pictures : static picture in Alcatel format
 - Alcatel animations : succession of static pictures in Alcatel format
3. SMS templates

Sequence of text, pictures and melodies to be stored on the mobile phone and to be forwarded by the end-user as an EMS.

These data are downloaded on the Alcatel mobile and can be forwarded by the end-user (except for MSEQ, VOX and MIDI) in an EMS to any EMS compatible mobile phone when they are compatible, and flagged as such, with the EMS specification.

1.2 Reference documents

- [1] Infrared Data Association, Specifications for Ir Mobile Communications (IrMC). iMelody v1.0
- [2] 3GPP TS 23.040 v4.4.0
- [3] REC GSM 05.03 "Channel coding" v7.3.0
- [4] REC GSM 06.20 "Half Rate Speech transcoding" v7.0.1
- [5] MSEQ multimedia file format - TSG SA#10 (00) 0690 – Bangkok 11-14/12/2000
- [6] Scalable Polyphony MIDI Specification, MIDI Manufacturers Association (2002)
- [7] The Complete MIDI 1.0 Detailed Specification, Incorporating all Recommended Practices, MIDI Manufacturers Association, Document version 96.1,1996
- [8] 3GPP TS 23.040 V5.3.0 (2002-03)

2 Format of data

Note: rules to fill the data

- Bits are coded as follow: value 0x2 corresponds to bit 7 to 2 set to 0, bit 1 to 1, bit 0 to 0.
- Words are coded as follow: value 1000 corresponds to MSB = 0x3, LSB = 0xE8
- MSB: Most significant Byte
- LSB: Least Significant Byte

2.1 IAlcatel melody

2.1.1 Content type

The content types that permit to receive this format are:

application/vnd.alcatel.lalcatel	Ialcatel melody not forwardable with EMS protocol
application/vnd.alcatel.lalcatel.EMS	Ialcatel melody forwardable with EMS protocol

2.1.2 Format

The format defined below is an Alcatel specific format.

The principle of this new format is to dissociate the duration and the frequency.

This format is specified to be compatible with the IMelody format.

If the melody is forwardable with EMS data format and is flagged as such, it can be forwarded by the end-user as an EMS to any EMS compatible mobile phone.

Rule to be compliant with EMS standard :

- *The melody shall be limited to 128 bytes when converted in iMelody format.*

2.1.2.1 Header

7	6	5	4	3	2	1	0
.							
I							
A							
L							
LSB Size							
MSB Size							
Most significant IAlcatel version number				Less significant IAlcatel version number			
Most significant IAlcatel format number				Less significant IAlcatel format number			
Beat MSB							
Beat LSB		Style		Volume			

LSB Size and MSB Size : size in byte of the melody, this size does not include the header.

Most significant Ialcatel version number: must be 1 in this version of specification.

Least significant lalcatel version number: must be 0 in this version of specification.
Most significant lalcatel format number: must be 2 in this version of specification.
Least significant lalcatel format number: must be 0 in this version of specification.
The repeat blocks can not be nested in this version of specification.

Style

Value	Style
0	Natural Style (rest between notes), default
1	Continuous Style (no rest between notes)
2	Staccato Style (shorter notes and longer rest period)

The mobile current implementation plays all styles like continuous style.

Volume

Value	Volume
0	Tone-off
1	level-1
2	level-2
3	level-3
4	level-4
5	level-5
6	level-6
7	level-7, default
8	level-8
9	level-9
10	level-10
11	level-11
12	level-12
13	level-13
14	level-14
15	level-15

Beat

Beat is an integer value in the range [25, 187].
The beat defines the tempo factor of the melody. The default beat is 120bpm.
The maximum beat that we can play is 187bpm and the minimum beat defined is 25bpm.
The name of the melody and of the composer is not stored in this format. The IMelody format derived from the parsing of this format does not contain the optional field NAME and COMPOSER.

2.1.2.2 Melody

The melody is defined by a sequence of Notes and Special bytes.

2.1.2.2.1 Note

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Duration-specifier	Duration ID	+/- volume command	0
Octave		Note ID	

Duration Specifier

Value (binary)	Duration
00	No special duration
01	Dotted note (note + 1/2 note)
10	Double dotted note (note + 3/4 note)
11	2/3 length (note + 2/3note)

Duration ID

Duration ID	Duration ID (binary)	Signification
0	000	Full-note
1	001	1/2-note
2	010	1/4-note
3	011	1/8-note
4	100	1/16-note
5	101	1/32-note
6	110	not used
7	111	not used

+/- volume command

Value (binary)	+/- volume command
00	No volume change
01	Increases volume of one level
10	Reduces volume of one level
11	not used

Octave

Value (binary)	Frequency
0000	A=55Hz
0001	A=110Hz
0010	A=220Hz
0011	A=440Hz
0100	A=880Hz
0101	A=1760Hz
0110	A=3520Hz
0111	A=7040Hz
1000	A=14080Hz

Note ID

note	note ID	note ID (binary)	Signification
c	0	0000	do
#c &d	1	0001	do#, re&
d	2	0010	re
#d &e	3	0011	re#, fa&
e	4	0100	mi
f	5	0101	fa
#f &g	6	0110	fa#, sol&
g	7	0111	sol
#g, &a	8	1000	sol#, la&
a	9	1001	la
#a, &b	10	1010	la#, si&
b	11	1011	si
	12	1100	not used
	13	1101	not used
	14	1110	not used
	15	1111	not used

2.1.2.2.2 Special byte

7	6	5	4	3	2	1	0
Information						Special byte ID	1
Optional byte							

The special byte can be coded in one or in two bytes.

The special byte defines the silences, the pattern and the special effects.

Special byte ID

Special byte ID	Description	Information
11	end of melody	duration of long silence
10	short silence	duration of the second note
01	user silence	duration of the silence
00	Other	

2.1.2.2.2.1 End of melody (11)

The special byte id 11 (binary) defines the end of melody. This byte is useful when the melody is played several times. The information bits are used to define the duration of the silence. The duration of the silence, is the duration of the full-note multiplied by information value.

End of melody

7	6	5	4	3	2	1	0
Information					11	1	

2.1.2.2.2.2 Short silence (10)

The special byte id 10 (binary) defines the short silence. The short silence is a silence with a predefined duration (40 ms whatever the melody's beat is) that is used to allow the listener to distinguish identical successive notes. The short silence plays both the silence and the second identical note. Two notes are said identical if they have the same frequency (same octave and same note id). The short silence byte is useful for two reasons :

- The mobile hardware for audio playing renders a succession of identical notes as one note with a duration equal to the addition of each successive note duration
- memory saving; encoding of a short silence is only one byte instead of two for a note encoding

In order not to encode identical successive notes, only the first one is encoded as a note and is then followed by one short silence for each subsequent identical note. The duration-specifier and duration-id in the short silence encoding give the duration of the subsequent identical note.

Short silence

7	6	5	4	3	2	1	0
Duration-specifier		Duration ID			10	1	

Duration ID

duration ID	Duration ID	signification
0	000	Full-note
1	001	1/2-note
2	010	1/4-note
3	011	1/8-note
4	100	1/16-note
5	101	1/32-note

6	110	not used
7	111	not used

Duration Specifier

Value	Duration
00	No special duration
01	Dotted note (note + 1/2 note)
10	Double dotted note (note + 3/4 note)
11	2/3 length (note + 2/3note)

2.1.2.2.2.3 User Silence (01)

The special byte id 01 (binary) defines the user silence (silence defined by the author of the melody). The duration of the user silence is placed in the information bits.

The user silence must be used instead of a short silence if the volume change applies to any notes within a succession of identical notes except the first one. In this case the default note encoding must be used and a user silence must be inserted between the two identical notes with volume change, instead of the short silence encoding. The user silence duration must be set to the duration of a short silence (duration-id = 7 -> silence = 0x3B).

User Silence

7	6	5	4	3	2	1	0
Duration-specifier		Duration ID			01		1

Duration ID

duration ID	Duration ID	signification
0	000	Full-note
1	001	1/2-note
2	010	1/4-note
3	011	1/8-note
4	100	1/16-note
5	101	1/32-note
6	110	not used
7	111	short silence (always 40ms)

Duration Specifier

Value	Duration
00	No special duration

01	Dotted note (note + 1/2 note)
10	Double dotted note (note + 3/4 note)
11	2/3 length (note + 2/3note)

2.1.2.2.2.4 Other (00)

The special byte id 00 (binary) defines the pattern or the special effect.
The bit 3 defines if the special byte is a pattern byte or a special effect byte.

Other

7	6	5	4	3	2	1	0
Information				other ID	00		1
Optional byte							

The special byte can be coded in one or in two bytes. It is coded on 2 bytes only in the case of special effect.

Other id table

Other id	Description	Information
1	Pattern	begin or end pattern and repeat
0	special effect	effect and on or off

2.1.2.2.2.4.1 Pattern

The other id 1 (binary) defines the pattern.
The special byte for pattern is the following:

Pattern

7	6	5	4	3	2	1	0
Repeat			Pattern id	1	00	1	

Pattern id table

Pattern ID	Description	Repeat
0	begin pattern	number of repeat MSB
1	end pattern	number of repeat LSB

The number of repetition is defined by combining the repeat bits of the two special bytes : begin pattern and end pattern.

2.1.2.2.2.4.2 Special effect

The other id 0 (binary) defines the special effects which are coded on two bytes.
The mobile current implementation does not process the special effect.
The special bytes for special effect are the following :

Special effect

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

Effect ID	0	00	1
Information			

Effect id table

Effect ID (bin)	Information	Description
0000	on/off	led
0001	on/off	vibe
0010	on/off	backlight
0011		not used
...		...
1111		not used

Information = 0 (OFF)

Information = 1 (ON)

2.1.2.3 Example :

Header				Note 1		short silence	Note 3		...	begin pattern	...		end pattern	...	End Melody
Byte 0	byte 9	byte 10	byte 11	byte 12	byte 13	Byte 14	...						byte n

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

.		
I		
A		
L		
LSB Size (n+1–10)		
MSB Size (n+1–10)		
Most significant IAlcatel version number = 1	Less significant IAlcatel version number = 0	
Most significant IAlcatel format number = 2	Less significant IAlcatel format number = 0	
Beat MSB		
Beat LSB	Style	Volume

Duration-specifier	Duration ID	+/- volume command	0
Octave		Note ID	

Duration-specifier	Duration ID	10	1
--------------------	-------------	----	---

Duration-specifier	Duration ID		+/- volume command	0
Octave		Note ID		
...				
repeat	0	1	00	1
...				
repeat	1	1	00	1
...				
Information			11	1

2.1.3 Restriction

The mobile only plays continuous style.
 Nested repeat blocks are not supported.
 The beat must be in the range [25, 187].

2.2 MSEQ melody

2.2.1 Content type

The content type that permit to receive this format is:

application/vnd.alcatel.SEQ

Alcatel polyphonic melody format

2.2.2 Format

This format is not in the scope of this document.

See document [5].

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- Sequencer-Specific settings

Items 1 to 2 above optimize the notes, while items 3 to 6 optimize the overall melody.

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2.4 VOX melody

2.4.1 Content type

The content type that permit to receive this format is:

application/vnd.alcatel.VOX

Sample melody (VOX)

2.4.2 Format

A VOX melody is a sampled melody. This melody must be compatible with the vocoder type supported by the terminal. The Alcatel choice is to supported the Half Rate vocoder for the melodies to download.

Note :

The size of this data is normally huge and is more suitable for a download service based on WAP.

2.4.2.1 Header

7	6	5	4	3	2	1	0
.							
V							
O							
X							

2.4.2.2 Melody

A melody is composed of a sequence of frames.

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
MSG_LENGTH								MESSAGE_TYPE = 90 hex							
..															b0
BR															
Bit 0 to Bit xx (see BR description)															
BFI	TAF	UFI	0	VOCODER_TYPE				RX_TYPE			bxx ..				
...															
MSG_LENGTH								MESSAGE_TYPE = 90 hex							
..															b0
BR															
Bit 0 to Bit xx (see BR description)															

BFI	TAF	UFI	0	VOCODER_TYPE	RX_TYPE	bxx ..
-----	-----	-----	---	--------------	---------	--------

2.4.2.2.1 Generic values

MESSAGE_TYPE	= 0x90
MESSAGE_LENGTH	= 2 if BFI=1
	= 18 if BFI=0 and VOCODER_TYPE = Full Rate
	= 18 if BFI=0 and VOCODER_TYPE = Enhanced Full Rate
	= 9 if BFI=0 and VOCODER_TYPE = Half Rate
	= 17 if BFI=0 and VOCODER_TYPE = AMR_12.2
	= 15 if BFI=0 and VOCODER_TYPE = AMR_10.2
	= 12 if BFI=0 and VOCODER_TYPE = AMR_7.95
	= 11 if BFI=0 and VOCODER_TYPE = AMR_7.4
	= 11 if BFI=0 and VOCODER_TYPE = AMR_6.7
	= 10 if BFI=0 and VOCODER_TYPE = AMR_5.9
	= 9 if BFI=0 and VOCODER_TYPE = AMR_5.15
	= 8 if BFI=0 and VOCODER_TYPE = AMR_4.75
BR	: 260 bits Full rate speech frame
	: 260 bits Enhanced Full Rate speech frame
	: 112 bits Half Rate speech frame
	: 244 bits AMR_12.2 speech frame
	: 204 bits AMR_10.2 speech frame
	: 159 bits AMR_7.95 speech frame
	: 148 bits AMR_7.4 speech frame
	: 134 bits AMR_6.7 speech frame
	: 118 bits AMR_5.9 speech frame
	: 103 bits AMR_5.15 speech frame
	: 95 bits AMR_4.75 speech frame
	: 0 bit in case of BFI = 1
BFI	: Bad Frame Indicator
UFI	: Unreliable Frame Indicator (only with HR vocoder)
TAF	: Time Frame Alignment
VOCODER_TYPE	: 0000 Full Rate Speech vocoder
	0001 Enhanced Full Rate Speech vocoder
	0010 Half Rate Speech vocoder
	1111 AMR_12.2 vocoder
	1110 AMR_10.2 vocoder
	1101 AMR_7.95 vocoder
	1100 AMR_7.4 vocoder
	1011 AMR_6.7 vocoder
	1010 AMR_5.9 vocoder
	1001 AMR_5.15 vocoder
	1000 AMR_4.75 vocoder
RX_TYPE (AMR only)	: 000 RX_SPEECH_GOOD
	001 RX_SPEECH_PROBABLY_DEGRADED
	010 RX_SPARE
	011 RX_SPEECH_BAD

100 RX_SID_FIRST
 101 RX_SID_UPDATE
 110 RX_SID_BAD
 111 RX_NO_DATA

2.4.2.2.2 Values for Half rate coding

The values in case of half rate coding are :

MESSAGE_LENGTH = 9

BR = 112 bits The value of this field is the result of the sampling as defined in doc [3], but the order of the bits must be the one defined in doc [4] table 3a & 3b. It corresponds to the interface 1 in figure 1 of doc [4].

BFI = 0

UFI = 0

VOCODER_TYPE = 0010

RX_TYPE (AMR only) = 000

2.4.3 Restriction

None

2.5 Alcatel picture

2.5.1 Content type

The content types that permit to receive this format are:

application/vnd.alcatel.picture	Alcatel picture not forwardable with EMS protocol
application/vnd.alcatel.picture.EMS	Alcatel picture forwardable with EMS protocol

2.5.2 BMMI format

The format defined below is an Alcatel specific format.

This Alcatel picture format is designed to be compatible with EMS picture format.

If an Alcatel picture is forwardable with EMS data format and is flagged as such, it can be forwarded by the end-user as an EMS to any EMS compatible mobile phone.

Rule to be compliant with EMS standard :

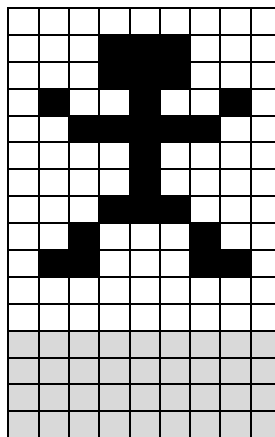
- ***the width (dx) shall be a multiple of 8***
- ***$dx/8 * dy \leq 128$*** (dy is the height of the picture)
- ***Four grey level picture are not supported for EMS.***

The first byte is the width in pixels of the picture (dx), the second is the height (dy), the following bytes are the data of the picture.

First byte	Second byte	third byte	...	last byte
dx	dy	8 first pixels of first column	...	last pixels of last column

Each bit represents a pixel (the pixel is lit if the corresponding bit is set). The pixels must be analyzed from the top (MSB) to the bottom and from the left to the right of the bitmap (BMMI format). The last bits of each column must be padded to end.

The pixels of the picture are coded in columns.



Padding bits for data byte boundary are shown in grey.

The data associated to this bitmap are :

```
{
  0x09, 0x0C,          /* dx, dy */
  0x00, 0x00,          /* 1 column */
  0x10, 0x40,          /* 2 column */
  0x08, 0xC0,          /* 3 column */
  0x69, 0x00,          /* 4 column */
  0x7F, 0x00,          /* 5 column */
  0x69, 0x00,          /* 6 column */
  0x08, 0xC0,          /* 7 column */
  0x10, 0x40,          /* 8 column */
  0x00, 0x00,          /* 9 column */
}
```

The data length of the picture can be calculated with the formula :

$$lg = dx * ((dy + 7) / 8).$$

2.5.3 4 grey levels format

The format defined below is an Alcatel specific format.

The first byte must be set to zero to indicate that this is not a BMMI icon.

The second byte defines the type of the Bitmap.

The Bitmap type can be the following:

Bitmap type	Description
0x00	4 grey levels with mask of transparency
0x01	4 grey levels without mask of transparency
0x02	Not used
...	...
0xFF	Not used

The third byte is the width in pixels of the icon (dx), the 4th byte is the height in pixel of the icon (dy).

The following bytes are the data byte (four grey levels data with or without mask of transparency).

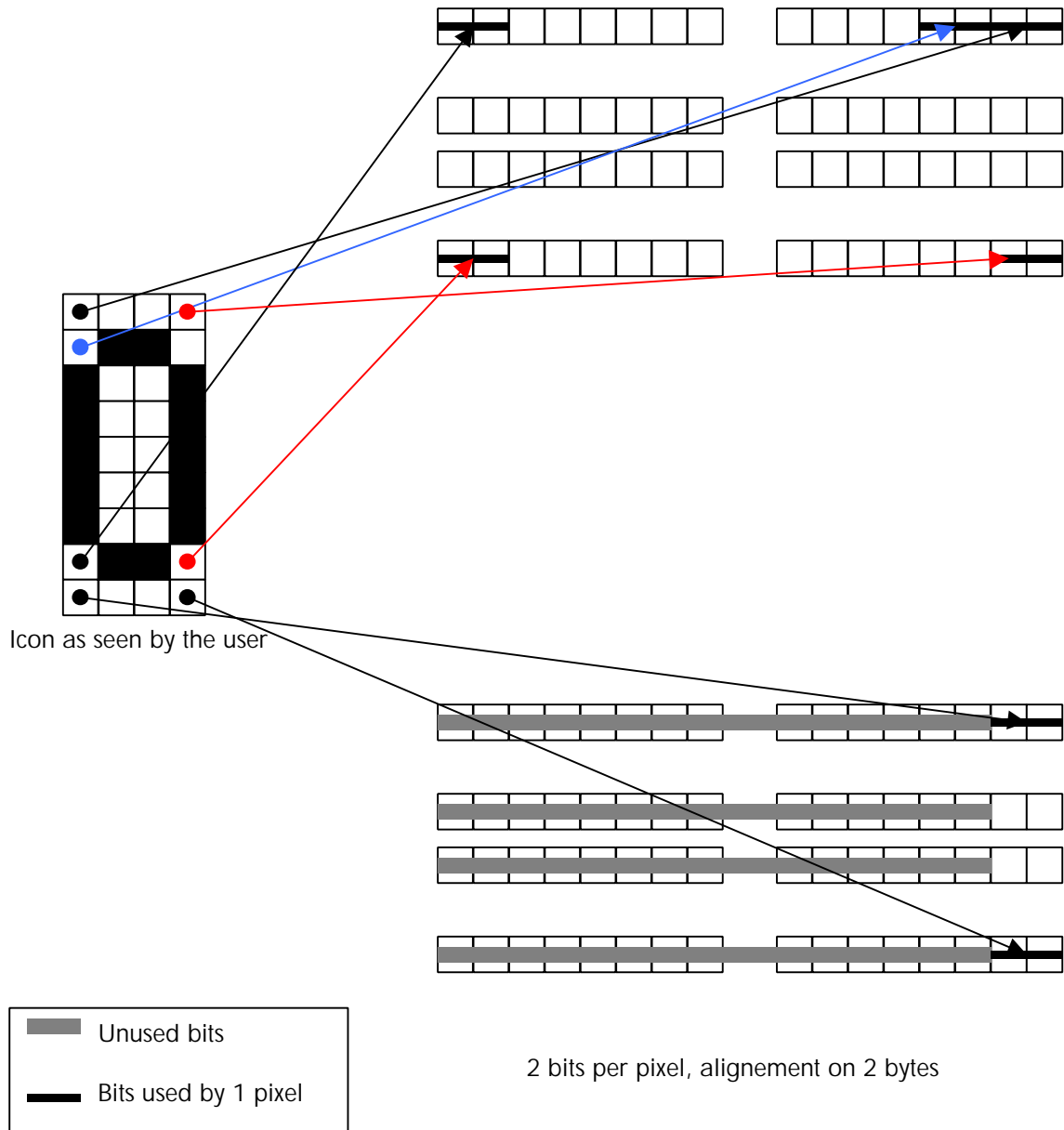
The four grey level data are coded as follow:

A pixel is coded on two bits, the grey level scale is :

00 = white, 01 = light grey, 10 = dark grey, 11 = black.

Each column is a multiple of 2 bytes.

Pictures are coded vertically by eight lines page from lower left to upper right. In each byte the most significant bit represents the pixel at the top of the page.



2.5.3.1 4 grey level with mask of transparency

First byte	Second byte	3 byte	4 byte	5 byte	...	n byte	n+1 byte	...	Last byte
0	0x00	dx	dy	8 first pixels of the first column of the mask of transparency	...	Last pixels of the last column of the mask of transparency	Four grey level data (see the previous figure)		

The mask of transparency is a BMMI icon.

The size of the mask of transparency is : $dx * ((dy+7)/8)$

$$n = (dx * ((dy+7)/8)) + 4$$

The length in byte of this data can be calculate with the formula:

$$Lg = (dx * ((dy+7)/8)) * 3 + 4$$

In these formulas the division is an integer division.

2.5.3.2 4 grey level without mask of transparency

First byte	Second byte	3 byte	4 byte	5 byte	...	Last byte
0	0x01	dx	dy	Four grey level data (see the previous figure)		

The length in byte of this data can be calculate with the formula:

$$Lg = (dx * ((dy+7)/8)) * 2 + 4$$

In these formulas the division is an integer division.

2.5.4 Restriction

None.

2.6 Alcatel animation

2.6.1 Content type

The content types that permit to receive this format are:

application/vnd.alcatel.animation protocol	Alcatel animation not forwardable with EMS
application/vnd.alcatel.animation.EMS protocol	Alcatel animation forwardable with EMS

2.6.2 Format

The Alcatel animation is a succession of static pictures which are associated with a picture display time. This format is composed of the general information about the animation followed by the static pictures. The static pictures are the Alcatel pictures defined in the chapter 2.4.

The Alcatel animation format is designed to be compatible with the EMS animation format.

If an Alcatel animation is forwardable with the EMS data format and is flagged as such, it can be forwarded by the end-user as an EMS to any EMS compatible mobile phone.

Rules to be compliant with EMS standard :

- ***the animation must be a sequence of 4 pictures with the same size***
- ***the picture display time has no meaning***
- ***the size of the pictures must be either 8x8 pixels or 16x16 pixels***
- ***the format of the picture must be BMMI (see 2.5.1)***
- ***-Four grey levels are not supported for EMS animation.***

Note 1: the size of animations is big and only small animations (in size and number of frames) are suitable for downloading over SMS. Typically a 96x65 full screen animation with 7 frames would take about 40 SMSs to download.

Note 2: the information in the sequence are coded in a word. In order to have an animation compatible with the mobile, the server must send the byte containing the bits 0 to 7 of a word before the byte containing the bits 8 to 15.

2.6.2.1 Header

The header is composed of the number of sequence words (picture display times and offset to the picture data used for the animation).

Header:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
----	----	----	----	----	----	---	---	---	---	---	---	---	---	---	---

MSB sequence_size	LSB sequence_size
-------------------	-------------------

Sequence_size: number of words defining the sequencing of the animation.

2.6.2.2 Animation

There are three types of data in this format:

- the picture display time
- the offset toward the static picture
- the static picture

The picture display time and the offset toward the static picture defines the sequencing of the animation.

The static pictures define the displayed data.

2.6.2.2.1 Sequencing

2.6.2.2.1.1 The picture display time

The picture display time is coded as follow:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
F				MSB X				LSB X							

X is the value of the picture display time. The granularity is 100ms. The picture display time is coded on 12 bits.

The picture display time ranges from 100 to 409500 ms (6' 49'' 500ms).

The animation begins with a picture display time, which defines the picture display time of the first picture. The picture display time associated to a picture is defined by the last picture display time applied.

2.6.2.2.1.2 The offset

The offset is coded as follow:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MSB offset								LSB offset							

The granularity of the offset is the byte.

The offset must be lower than 0xF000.

The offset toward a static picture is the number of bytes between the beginning of the file (first byte of the header) and the beginning (first byte) of the definition of this static picture.

2.6.2.2.2 The static picture

The static picture is coded as follow:

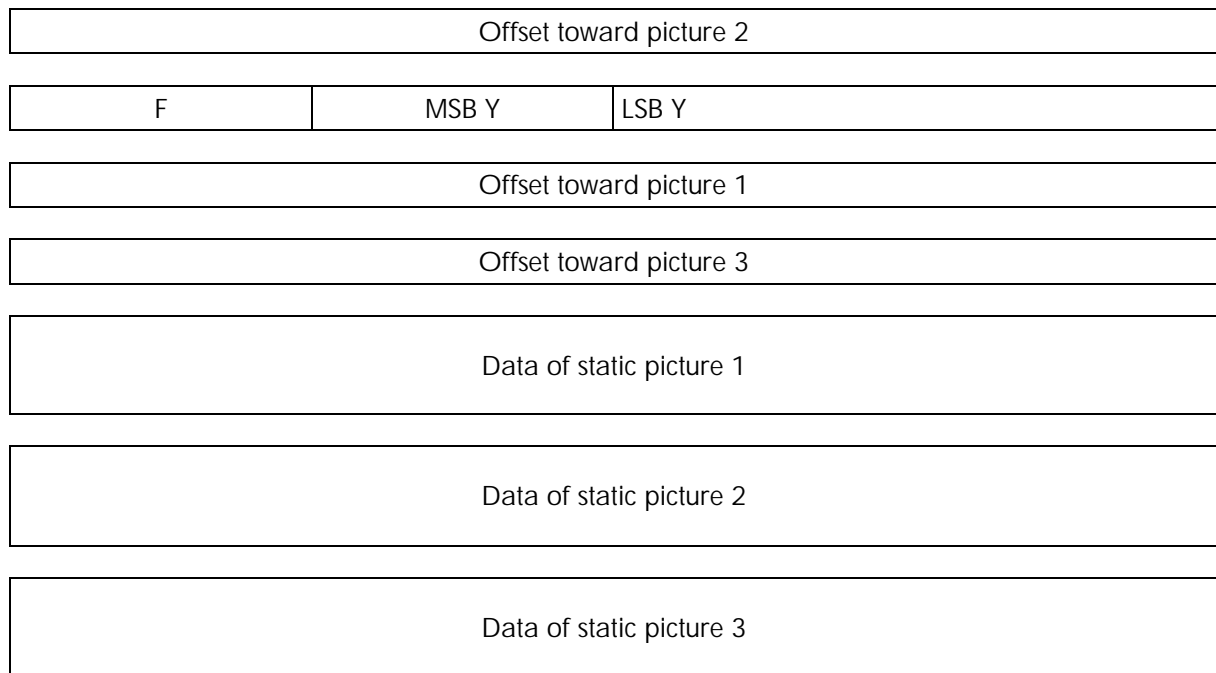
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Alcatel picture data															

The static picture data is defined in the chapter 2.4.3

The number of bytes is not necessarily even.

2.6.2.3 Example of animation:

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Sequence_size = 6															
F				MSB X				LSB X							
Offset toward picture 1															



The sequence_size is the sum of the offset towards the static picture and of the picture display time (6).
 The first and the second picture display time is defined by the X value.
 The third and fourth picture display time is defined by the Y value.
 We can use the same picture several times in the animation sequence, but the data of this static picture will be stored only once.

2.6.3 Restriction

None

2.7 SMS template

2.7.1 Content type

The content type that permit to receive this format is:

application/vnd.alcatel.SMS

Alcatel EMS template

2.7.2 Format

An SMS template is a sequence of different data types. When the mobile receives such an SMS template, it can be saved as a canned message. Then the user can edit the canned message and send it as an EMS compatible message (see ref. [2] for definition of EMS). The resulting EMS message can fit in up to 10 concatenated SMS.

The format of the different data types must be compliant with the EMS standard. The rules to be EMS compliant are defined below.

An SMS template is composed of a header and a message part as specified below.

2.7.3 Header

7	6	5	4	3	2	1	0
Number of data elements							Alphabet

Alphabet

Value (binary)	Alphabet used for the text
0	GSM default alphabet (7 bits coding)
1	UCS2 (2 bytes coding)

2.7.4 Message

A message is composed of a sequence of data elements.

7	6	5	4	3	2	1	0
Unused					Type of data		
LSB Data Size							
MSB Data Size							
Data							

...	
Unused	Type of data
LSB Data Size	
MSB Data Size	
Data	

2.7.4.1 Data Size

Data Size bytes give the number of bytes of the data part except if the data is of Text type, in this case the Data Size bytes give the number of characters.

Examples:

- for a 30 bytes picture, Data Size=30
- for a 9 characters text encoded using GSM alphabet (7 bits), Data Size=9 but the number of bytes is 8 (= (7* number of chars+7)/8)
- for a 9 characters text encoded using UCS2 (16 bits), Data Size=9 but the number of bytes is 18 (=2*number of chars)

The number of bytes must be less than or equal to 248.

2.7.4.2 Type of data

Value (binary)	Type of data
000	Text
001	Predefined sound
010	Predefined animation
011	Melody
100	Picture
101	Animation

2.7.4.3 Data

2.7.4.3.1 Text (type of data = 000)

Text coded with the alphabet specified in the header part.

The following special strings can be placed in the text :

- **#T#** : insert current time
- **#D#** : insert current date
- **#N#** : insert current MSISDN

– **in all other cases the # is suppressed.**

Example : « Call me at #T# on #D# at #N# #C5# » is displayed as « Call me at 12 :00 on 25/09 at 0610111213 C5 »

2.7.4.3.2 Predefined sound (type of data = 001)

The format of a predefined sound is the one specified in EMS standard (see doc [2]).

A predefined sound is given by a reference number coded on one byte.

In this case, the Data is the Sound Number.

Sound number	Description
0	Chimes high
1	Chimes low
2	Ding
3	TaDa
4	Notify
5	Drum
6	Claps
7	FanFar
8	Chord high
9	Chord low

2.7.4.3.3 Predefined animation (type of data = 010)

The format of a predefined animation is the one specified in EMS standard (see doc [2]).

A predefined animation is given by a reference number coded on one byte.

In this case, the Data is the Animation Number

Animation number	Description
0	I am ironic, flirty
1	I am glad
2	I am sceptic
3	I am sad
4	WOW !
5	I am crying
6	I am winking
7	I am laughing
8	I am indifferent
9	In love / kissing
10	I am confused
11	Tongue hanging out

Animation number	Description
12	I am angry
13	Wearing glasses
14	Devil

2.7.4.3.4 Melody (type of data = 011)

The format of melody is the Alcatel melody format as defined in §2.1.

Rule to be compliant with the EMS standard :

- *The melody shall be limited to 128 bytes when converted in iMelody format.*

2.7.4.3.5 Picture (type of data = 100)

The format of picture is the Alcatel picture format as defined in §2.5.2.

Rules to be compliant with the EMS standard :

- *the width (dx) shall be a multiple of 8*
- *$dx/8 * dy \leq 128$ (dy is the height of the picture)*

2.7.4.3.6 Animation (type of data = 101)

The format of animation is the Alcatel animation format as defined in §2.6.

The icon of the animation must be in BMMI format.

Rules to be compliant with the EMS standard :

- *the animation shall be a sequence of 4 pictures with the same size*
- *the picture display time has no meaning*
- *the size of the pictures shall be either 8x8 pixels or 16x16 pixels*

2.7.5 Restriction

None

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