

PlayStation®3 at3tool User's Guide

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1 Overview

Purpose and Characteristics

PlayStation®3 at3tool (PS3at3tool) is an encoding/decoding tool for ATRAC3™/ATRAC3plus™ data.

It is a console program that runs on Windows and encodes Riff-Wave format, 16-bit Linear PCM (LPCM) data into ATRAC3™/ATRAC3plus™ data that can be used by PlayStation®3 applications. Loops can also be set per sample (just one loop can be set per data).

PS3at3tool is also able to decode ATRAC3™/ATRAC3plus™ data into LPCM data. The tool can be used to evaluate the quality of encoded sound data, and to distinguish between issues with the playback program and those with the sound data.

Files

The following files are required when using PS3at3tool.

File	Description
PS3at3tool.exe	Program file

Required Environment

PS3at3tool requires the following environment to run.

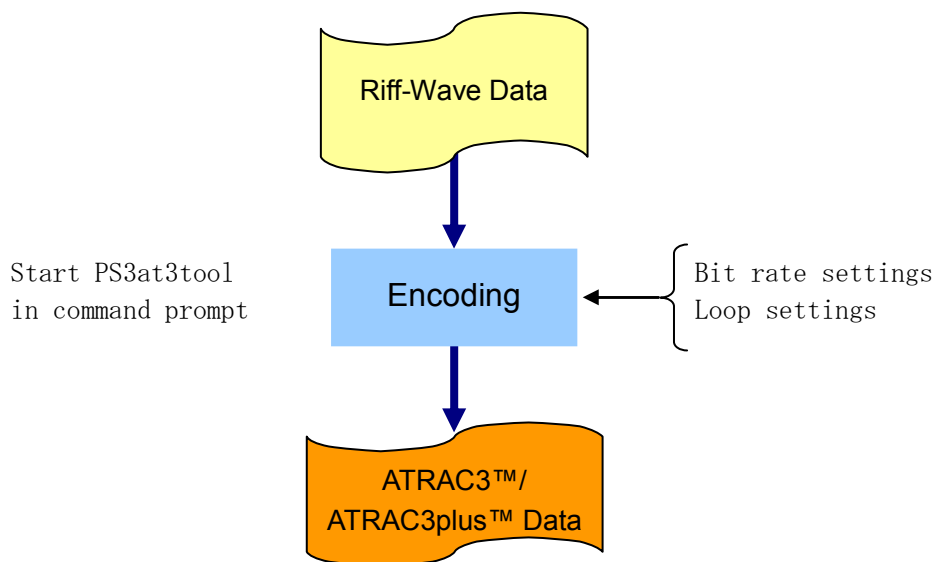
Requirement	Description
OS	Microsoft Windows XP SP2 or later
CPU	OS must run correctly
Memory	OS must run correctly
Component	Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package ATL Security Update program (vcredist_x86.exe) must be installed (the update program is included in the latest SDK package)

2 Encoding

Encoding Instructions

Riff-Wave data can be encoded using PS3at3tool to obtain ATRAC3™/ATRAC3plus™ data as follows.

Figure 1 Creating ATRAC3™/ATRAC3plus™ Data



(1) Open a Command Prompt

Click Start, point to All Programs, then Accessories, and then Command Prompt to open a command prompt.

(2) Execute PS3at3tool

Enter the following command to execute PS3at3tool. Specify the filename of the source Riff-Wave data and the output filename as parameters.

Command Syntax

```
PS3at3tool -e [options] srcfilename outputfilename
```

Options

The following options are available in encoding.

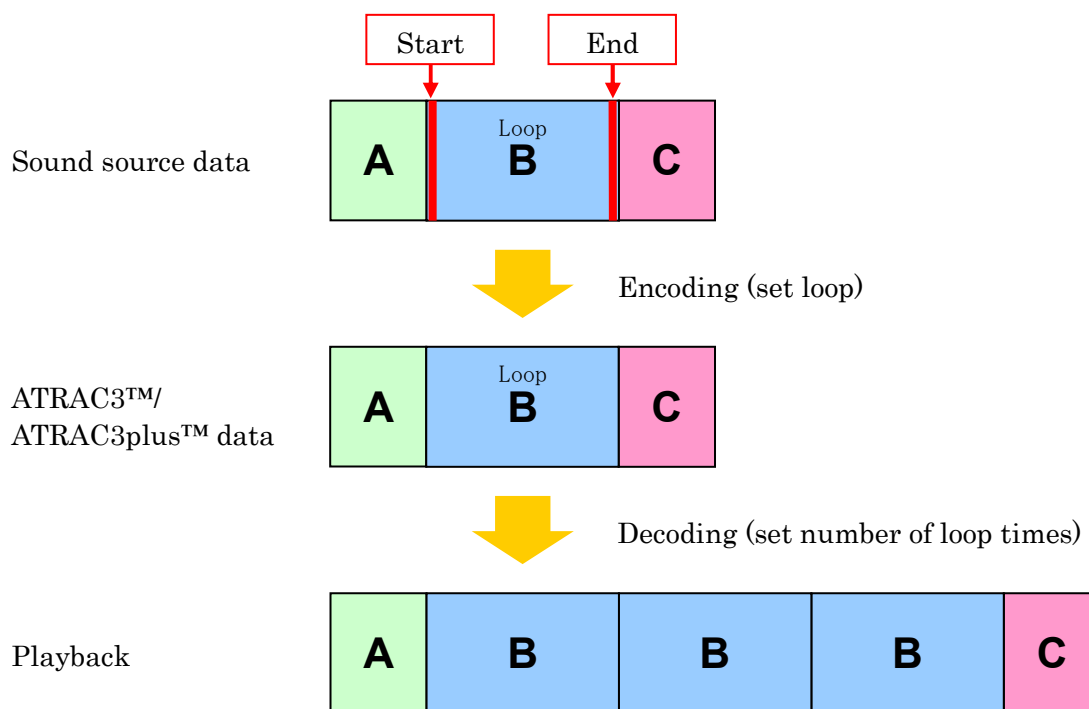
Option	Description
-br <i>N</i>	Bit rate. The following values can be specified for <i>N</i> : 32, 48, 57, 64, 72, 96, 114, 128, 144, 160, 192, 256, 320, 384, 512, 768.
-loop <i>S E</i>	Loop settings. Specify the starting position of the loop to <i>S</i> and the ending position to <i>E</i> in sample units.

Note that the ending position of the loop specifies the last sample of the repeated part. Also, S and E must be specified to satisfy the following equation, with MaxSample as the total number of samples of the source file.

$$0 \leq S < S + 6143 \leq E < \text{MaxSample}$$

If $(\text{MaxSample}-1)$ is specified to E , the playback will loop back to the position specified with S when played all the way through. If a value smaller than $(\text{MaxSample}-1)$ is specified to E , there will be an epilogue after the loop. In either case, the number of times to repeat the loop is to be specified at playback.

Figure 2 Loop Settings



Encoding Example

The following is an example encoding a sample.wav file (stereo, 49152 samples) at 128 kbps. The result will be output as sample1.at3.

```
> PS3at3tool.exe -e -br 128 sample.wav sample1.at3
encoding 128 kbps (ATRAC3plus)
Total Encoded Bytes = 17888 Bytes@26frames(ave=688bytes)
```

The following encodes sample.wav in the same way as above, and then sets a loop section starting with the 10th sample from the top until the end. The result will be output as sample2.at3.

```
> PS3at3tool.exe -e -br 128 -loop 10 49151 sample.wav sample2.at3
encoding 128 kbps (ATRAC3plus)
loop position = [ 10, 49151]
Total Encoded Bytes = 17888 Bytes@26frames(ave=688bytes)
```

Input Data Specifications

PS3at3tool is able to encode Riff-Wave data with the following specifications.

Number of Channels

1ch, 2ch, 5.1ch, or 7.1ch

Bit Rate

The supported formats and bit rates depend on the number of channels used, as shown in Table 1.

Table 1 Bit Rates Supported by PS3at3tool

Format	Bit rate	1ch	2ch	5.1ch	7.1ch
ATRAC3™	57 kbps	yes	no	no	no
	72 kbps	yes	yes	no	no
	114 kbps	no	yes	no	no
	144 kbps	no	yes	no	no
ATRAC3plus™	32 kbps	yes	no	no	no
	48 kbps	yes	no	no	no
	64 kbps	yes	yes	no	no
	96 kbps	yes	yes	no	no
	128 kbps	yes	yes	no	no
	160 kbps	no	yes	no	no
	192 kbps	no	yes	yes	no
	256 kbps	no	yes	yes	no
	320 kbps	no	yes	yes	no
	384 kbps	no	no	yes	yes
	512 kbps	no	no	yes	no
	768 kbps	no	no	no	yes

Bit Sampling and Sampling Rate

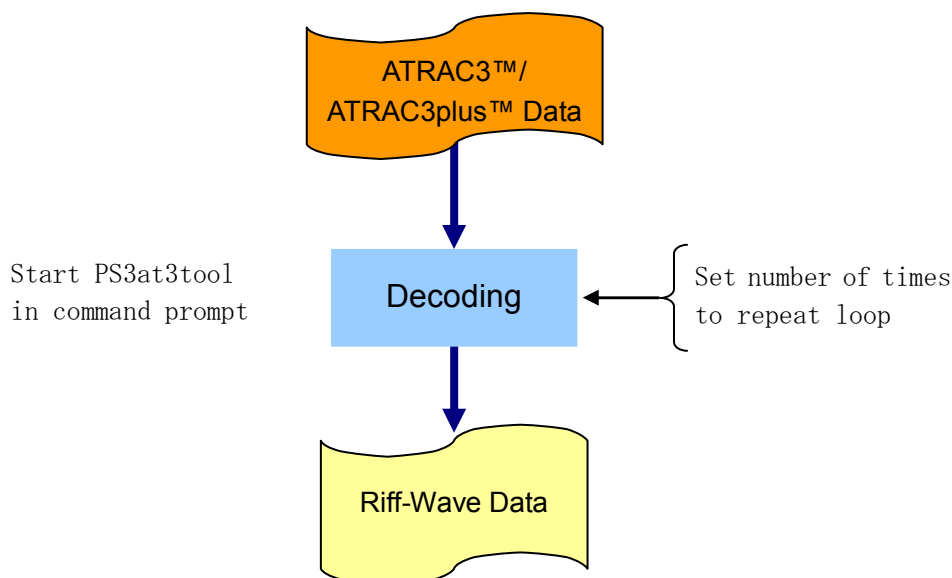
16 bits/sample, at 48000Hz

3 Decoding

Decoding Instructions

ATRAC3™/ATRAC3plus™ data can be decoded using PS3at3tool to obtain Riff-Wave data as follows.

Figure 3 Decoding ATRAC3™/ATRAC3plus™ Data



(1) Open a Command Prompt

Click Start, point to All Programs, then Accessories, and then Command Prompt to open a command prompt.

(2) Execute PS3at3tool

Enter the following command to execute PS3at3tool. Specify the filename of the source ATRAC3™/ATRAC3plus™ data and the output filename as parameters.

Command Syntax

```
PS3at3tool -d [options] srcfilename outputfilename
```

Options

The following options are available in decoding.

Options	Description
-repeat <i>N</i>	Number of times to repeat the loop Loop section is output (<i>N</i> -1) times more than the normal decoding output. This option is ignored if it is set for data that did not have a loop set at encoding.

Decoding Example

The following example decodes the sample1.at3 (no loop) file resulting from the above encoding example. The result will be output as sample1.wav.

```
> PS3at3tool.exe -d sample1.at3 sample1.wav
decoding 128 kbps (ATRAC3plus)
Total Decoded Bytes    = 17888 Bytes@26frames (ave=688bytes)
```

The following decodes the sample2.at3 file (resulting from the above encoding example with a loop) so that it plays back the loop section 3 times. The result will be output as sample2.wav.

```
> PS3at3tool.exe -d -repeat 3 sample2.at3 sample2.wav
decoding 128 kbps (ATRAC3plus)
Decoded Bytes    = 17200 Bytes@25frames (ave=688bytes)
Decoded Bytes    = 17200 Bytes@25frames (ave=688bytes)
Decoded Bytes    = 17200 Bytes@25frames (ave=688bytes)
```


4 Notes

Audio Format of BGM in Content Information

The BGM of content information must adhere to the specifications listed below.

Thus, files of the ATRAC3™ format, files with a sampling frequency other than 48kHz, and files with channels greater than 2ch cannot be used as BGM.

For details, refer to the chapter on BGM in "Content Information Specifications".

Format: ATRAC3plus™

Sampling frequency: 48kHz

Number of channels: 1ch or 2ch

Peak volume: less than -12db recommended

Compatibility of Streams Encoded in the ATRAC3plus™ Format

Streams encoded in the ATRAC3plus™ format are to be played back using libatrac3plus. These streams are not compatible with other multi-stream offline tools or PAMF tools.

Please take note of this when using streams encoded in the ATRAC3plus™ format.

5 Additional Information

Bit Rates and Elementary Streams

An ATRAC3™/ATRAC3plus™-encoded stream is composed of a Riff-Wave-format header and multiple elementary streams.

The elementary streams have a fixed size corresponding to the bit rate (as shown below in Table 2). For this reason, it is possible to calculate the boundaries of the elementary streams.

This calculation also enables the seek-playback of streams by libadec.

Table 2 Bit Rates and Elementary Stream Sizes (in Bytes)

Format	Bit rate	1ch	2ch	5.1ch	7.1ch
ATRAC3™	57 kbps	152	N/A	N/A	N/A
	72 kbps	192	192	N/A	N/A
	114 kbps	N/A	304	N/A	N/A
	144 kbps	N/A	384	N/A	N/A
ATRAC3plus™	32 kbps	176	N/A	N/A	N/A
	48 kbps	256	N/A	N/A	N/A
	64 kbps	344	344	N/A	N/A
	96 kbps	512	512	N/A	N/A
	128 kbps	688	688	N/A	N/A
	160 kbps	N/A	856	N/A	N/A
	192 kbps	N/A	1024	1024	N/A
	256 kbps	N/A	1368	1368	N/A
	320 kbps	N/A	1712	1712	N/A
	384 kbps	N/A	N/A	2048	2048
	512 kbps	N/A	N/A	2736	N/A
	768 kbps	N/A	N/A	N/A	4096