G.711 Speech Decoder

API

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Revision History

Version	Date	Changes
1.0	22 August 2007	Original

Contents

1. Introduction

1.1 Motivation

The ITU G.711 (A-law and u-law) converts digitized, linear PCM input signals sampled at an 8 kHz sampling rate into an 8-bit compressed (Logarithmic) representation. This document describes the interface structures available for G711 Decoder.

This document describes the **A**pplication **P**rogram **I**nterface for the ITU-T G.711 codec fro XDM v0.9.

1.2 Scope

The document assumes that the reader is familiar with XDAIS and XDMI APIs as defined by TI. Here only the specific detail about the interface structures (standard and extended) being used by this speech decoder has been mentioned.

Glossary

API	Application Program Interface (Interface through which an application talks to functional blocks)
ITU	International Telecommunications Union

2. Interface Data Structures

2.1 API of G.711 Decoder

2.1.1 Functional Interface

Same as the standard ISPHDEC_Fxns. Please refer to ITM-SPHDEC-API.doc.

2.1.2 Input/Output Format

2.1.2.1 Input Format

1. The encoded bitstream format is as defined by ITU-T reference software. The same format is also followed by RFC-3551. It is A-law or U-law compressed 8-bit per sample stream.
2. The encoded stream is octet aligned. There is no header associated with the stream. As each sample is individually encoded, decoding can start with any octet-aligned point.
3. The stream has to be single channel. Not support for stereo.

2.1.2.2 Output Format

It is stream of 16 bits PCM samples for a single channel.

2.1.3 Default Parameters

ITTIAM_G711DEC_PARAMS		
Description	This contains the default initialization parameters for the component.	
Syntax	Same as ITTIAM_G711DEC_Params	
Parameters	Names	Values
	Standard ISPHDEC_Params	
	`Size`	sizeof(ITTIAM_G711DEC_Params)
	`dataEnable`	0
	`compandingLaw`	ISPEECH_ALAW

	PackingType	0
Usage	Application gets a set of suitable set of configuration parameters and may need to update only few of them. See the detail of parameters below.	

2.1.4 Data structures

2.1.4.1 ITTIAM_G711DEC_Params

2.1.4.1.1 Specific usage of ISPHDEC_Params

All the parameters is used same as the standard ones. Here are the details.

Parameters	Used	Description
size	Yes	Must be sizeof (ITTIAM_G711ENC_Params)
dataEnable	No	Not applicable
compandingLaw	Yes	Companding law for input as per ISPEECH_CompoundLaw in ispeech.h
PackingType	No	Not applicable

2.1.4.1.2 Ittiam extentions of ISPHDEC_Params

None

2.1.4.2 ITTIAM_G711DEC_DynamicParams

2.1.4.2.1 Specific usage of ISPHDEC_DynamicParams

All the parameters is used same as the standard ones.

Parameters	Used	Description
size	Yes	Size of the structure
postFilter	No	Not applicable

2.1.4.3 ITTIAM_G711DEC_Status

2.1.4.3.1 Specific usage of ISPHDEC_Status

All the parameters is used same as the standard ones. Details follow.

Parameters	Used	Description
size	Yes	Size of the structure ITTIAM_G711DEC_Status
extendedError	No	No particular error available
postFilter	No	Not applicable

dataMode	No	Not used currently.
bufInfo	Yes	Input/Output buffer info

2.1.4.4 ITTIAM_G711DEC_InArgs

2.1.4.4.1 Specific usage of ISPHDEC_InArgs

All the parameters is used same as the standard ones. Specific detail follow.

Parameters	Used	Description
size	Yes	Size of the structure ITTIAM_G711DEC_InArgs
frameType	No	Not applicable.
inBufferSize	Yes	Number of bytes available for decoding
data	No	Not applicable.

2.1.4.4.2 Ittiam extentions of ISPHDEC_InArgs

This interface structure is not extended.

2.1.4.5 ITTIAM_G711DEC_OutArgs

2.1.4.5.1 Specific usage of ISPHDEC_OutArgs

All the parameters is used same as the standard ones.

Parameters	Used	Description
size	Yes	Size of the structure ITTIAM_G711DEC_OutArgs
mode	No	Not applicable

2.1.4.5.2 Ittiam extentions of ISPHDEC_OutArgs

This interface structure is not extended.

2.1.4.6 Control commands

Commands	Support	Description
XDM_GETSTATUS	No	Other than bufInfo field nothing else is available for application. bufInfo is given out for XDM_GETBUFINFO command.
XDM_SETPARAMS	No	No dynamic params supported
XDM_RESET	Yes	It is a sample based codec, so nothing particular done.

XDM_SETDEFAULT	No	No dynamic params to update
XDM_FLUSH	No	Sample based codec, nothing buffered
XDM_GETBUFINFO	Yes	Buffer Info is given out
XDM_GETVERSION	No	Not supported

3. Reference

[1]	spru360e.pdf	TMS320 DSP Algorithm Standard API Reference.
[2]	RFC 3551	http://www.faqs.org/rfcs/rfc3551.html