User's Manual

OMX Media Component

User's Manual WMA Standard Decoder Part

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1. Overview

1.1. Overview of This Document

This document is the User's Manual for the OMX Media Component and specifications of the WMA Standard Decoder Media Component are described.
Please read this document with related document [1] and [2].

1.2. Overview of WMA Standard Decoder Media Component and Scope of This Document

Figure 1-1shows the software configuration of the WMA Standard Decoder Media Component and scope. The WMA Standard Decoder Media Component consists of the OMX Media Component Common Library which provides common functions of OpenMAX IL, the OMX Media Component Audio Common Library which provides common functions of audio processing, and the OMX Media Component WMA Standard Decoder Library which realizes functions of WMA Standard Decoder. The OMX Media Component WMA Standard Decoder Library controls ARM WMA Decode Middleware and realizes codec processing.

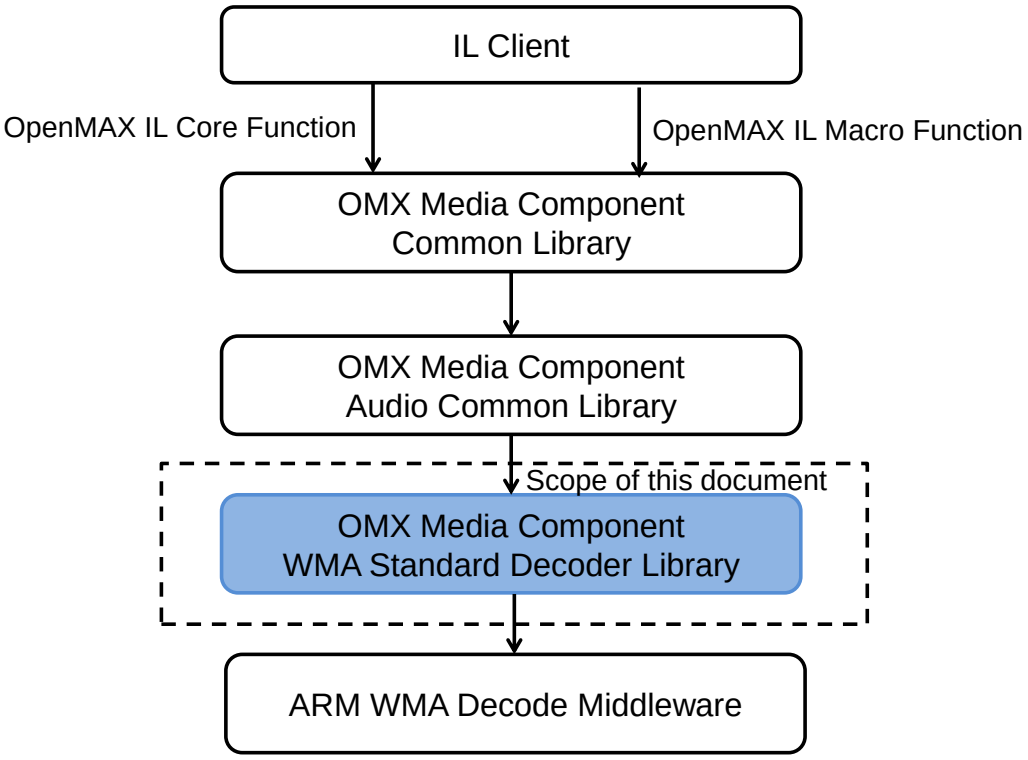

Figure 1-1 Software Configuration of WMA Standard Decoder Media Component and Scope

1.3. Related Documents

Table 1-1 shows the reference documents and related documents.

Table 1-1 List of Related Documents

No	Document Name	Description
[1]	OMX Media Component User's Manual Common Part	
[2]	OMX Media Component User's Manual Audio Common Part	
[3]	OpenMAX Integration Layer Application Programming Interface Specification Version 1.1.2, September 1, 2008	http://www.khronos.org/registry/omxil/specs/OpenMAX_IL_1_1_2_Specification.pdf
[4]	Advanced Systems Format (ASF) Specification Revision 01.20.03	

1.4. Terminology

Table 1-2 shows the terminology used in this document.

Table 1-2 Terminology

Term	Abbreviation	Description
Audio Port Base	APB	The base value of the port index of the Audio Media Component. The port index values of the input and output ports are obtained by adding offset values to this base value.
OpenMAX IL	-	Open API specified by the Khronos Group. It standardizes accesses to primitive media processing which is commonly used in graphics, audio, and image libraries.
Component	-	Refers to a component that is defined in OpenMAX IL Specification.
Media Component	MC	A component that performs multimedia processing. It corresponds to the Component that is defined in OpenMAX IL.
IL Client	-	Refers to software that uses functions of OpenMAX IL Core and Component.

1.5. Role Name and Component Name

Table 1-3 shows the role name and component name of WMA Standard Decoder Media Component.

Table 1-3 Role Name and Component Name

Role Name	Component Name
audio_decoder.wma	OMX.RENESAS.AUDIO.DECODER.WMA

2. Functions

The WMA Standard Decoder Media Component is the component that provided functions to decode data compressed by Windows Media® Audio standard.

The WMA Standard Decoder Media Component performs decode processing when compressed data is stored in the input buffer and stores resulted linear PCM data to the output buffer.

2.1. Function Details

2.1.1. Decode Function

The supported standards and functions by the WMA Standard Decoder Media Component are shown as below.

Table 2-1 Supported Standards and Functions

Coding Method	Microsoft Windows Media Audio Standard L3 profile
Input Format	Payload Data or Sub-Payload #N Data (N = 0, 1…)
Input Channel	1 channel 2 channels
Input Sampling Frequency	8 / 11.025 / 16 / 22.05 / 32 / 44.1 / 48 kHz
Input Bit Rate	5 - 320kbps(CBR), - 385kbps(VBR)
Output Format	16 bit linear PCM (channel interleaved format)
Output Channel	1 channel 2 channels
Output Sampling Frequency	Same as input sampling frequency

The un-supported functions for the WMA Standard Decoder Media Component are shown below.
Data encoded with WMA Pro, Voice, or Lossless Codec is not to be decoded.
Data protected by DRM (Digital Rights Management) is not to be decoded.

2.1.2. Notification Function of Port Information Change

The WMA Standard Decoder Media Component sends event when the information of “Output Sampling Frequency”, “Output Channel Number”, and “Output Channel Mapping” is changed. Please refer to section 7, for details.

2.2. Port

The WMA Standard Decoder Media Component has one input port and one output port.

The input port has input buffers to store compressed data, and the output port has output buffers to store PCM data.

Table 2-2 Ports of WMA Standard Decoder Media Component

Component	Port Index	Type
WMA Standard decoder Media Component	APB+0	Input Port
	APB+1	Output Port

3. I/O Data Format

3.1. Buffer Payload

Figure 3-1 shows the data storage format of input buffers for WMA Standard Decoder Media Component. "fn" in the figure denotes the sequence number (payload number) of compressed data. Compressed data is input to WMA Standard Decoder Media Component in payload units. If a payload cannot be stored in a single input buffer, store it in multiple input buffers. Please set OMX_BUFFERFLAG_ENDOFFRAME flag to the buffer flag (nFlags in the OMX_BUFFERHEADERTYPE structure) of the input buffer which the last of a payload is contained.

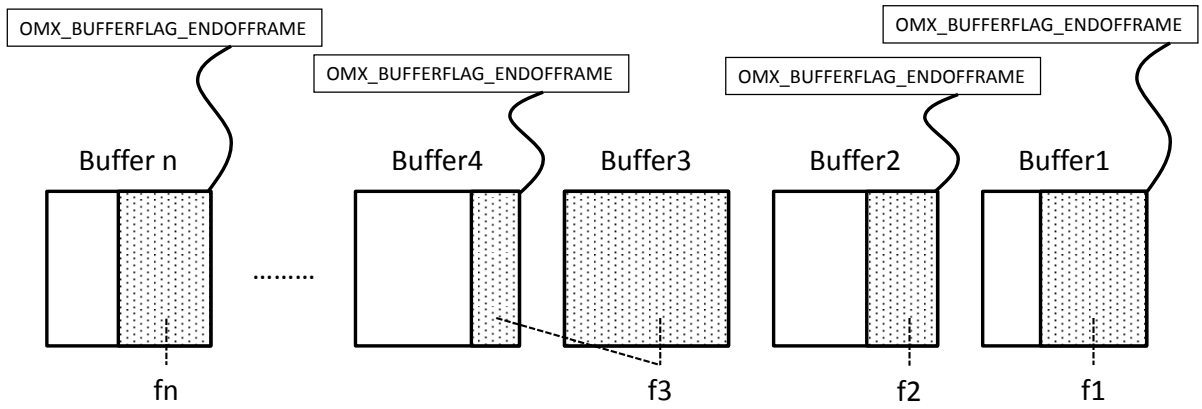

Figure 3-1 Data Storage Format of Input Buffers

Figure 3-2 and Figure 3-3 show the data storage format of output buffers for WMA Standard Decoder Media Component. PCM data decoded by WMA Standard Decoder Media Component can be stored in the output buffers in one frame unit or sequentially. However, equal-time linear PCM samples (for all channels) are stored to same buffer.

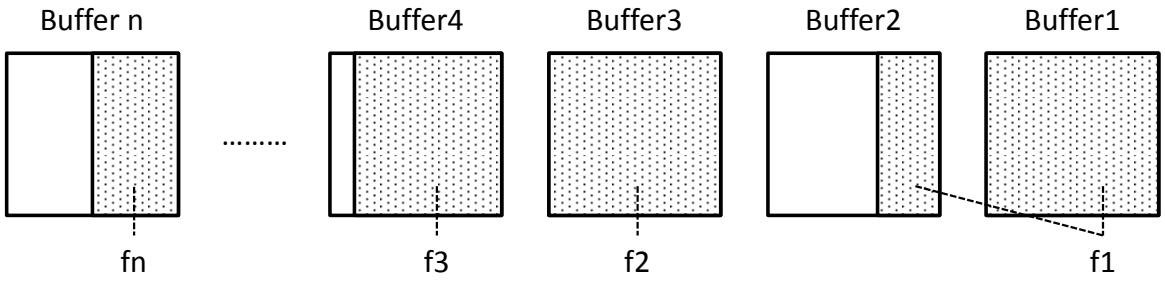

Figure 3-2 Data Storage Format of Output Buffer (1 Payload Unit)

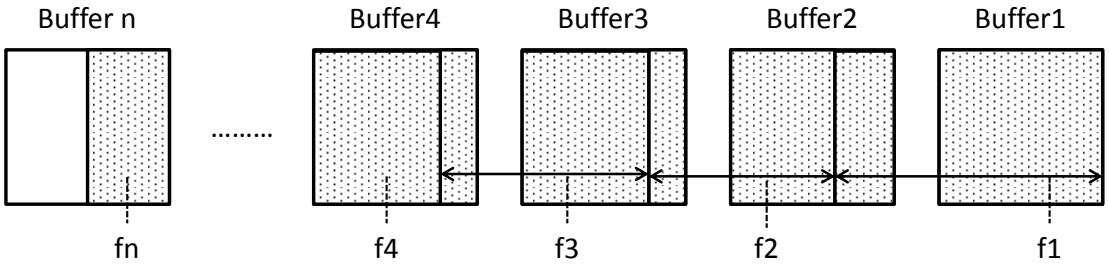

Figure 3-3 Data Storage Format of Output Buffer (Continuation)

3.2. Data Format of Input Buffer

Figure 3-4 shows input buffer format. A payload or a sub-payload is stored to the input buffer and the data size is set to nFilledLen in the OMX_BUFFERHEADERTYPE structure.

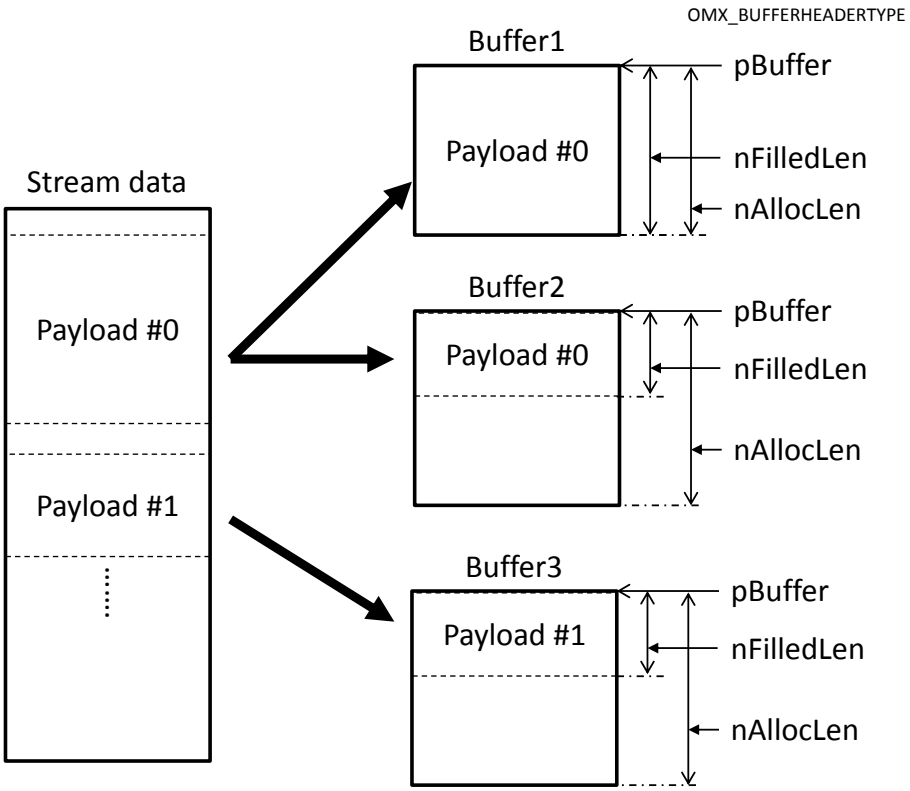

Figure 3-4 Data Format of Input Buffer

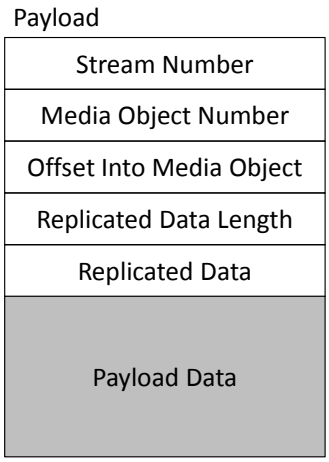

Figure 3-5 Data Format of Payload

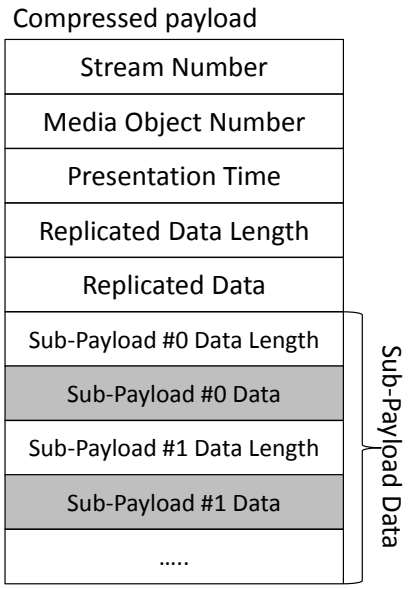

Figure 3-6 Data Format of Compressed Payload

For Payload (Payload Data) and Compressed Payload (Sub-Payload Data), refer to Advanced Systems Format (ASF) Specification (Related Document [4]).

3.3. Data Format of Output Buffer

WMA Standard Decoder Media Component stores the volume of output data specified by nFilledLen in the OMX_BUFFERHEADERTYPE structure from the address specified by a member of that structure as shown in Figure 3-7.

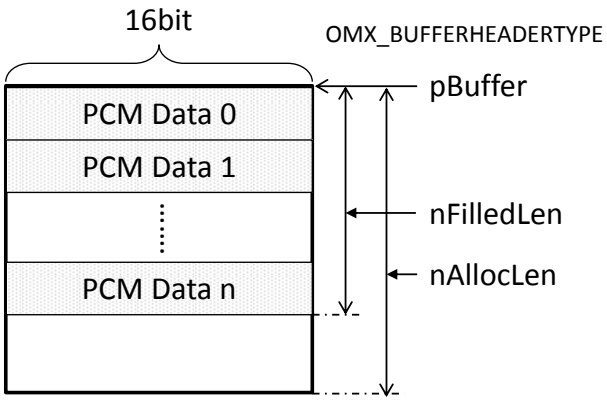

Figure 3-7 Data Format of Output Buffer

In WMA Standard Decoder Media Component, layout of PCM data is different for each output channel. Figure 3-8 shows formats of each output channel.

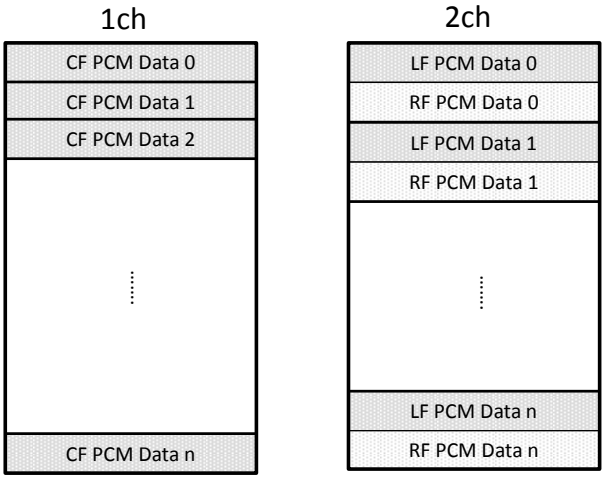

Figure 3-8 Data Format of each Output Channel

4. API Reference

Please refer to the related document [2].

5. Indexes

5.1. Standard Indexes of WMA Standard Decoder Media Component

Table 5-1 shows the list of standard indexes that are available for WMA Standard Decoder Media Component.

Table 5-1 List of Indexes available for WMA Standard Decoder Media Component

Index	Corresponding Strucure Name
Description	
OMX_IndexParamAudioInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamVideoInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamImageInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamOtherInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamStandardComponentRole	OMX_PARAM_COMPONENTROLETYPE Structure
Please refer to the related document [1].	
OMX_IndexParamCompBufferSupplier	OMX_PARAM_BUFFERSUPPLIERTYPE Structure
Please refer to the related document [1].	
OMX_IndexParamPortDefinition	OMX_PORTDEFINITIONTYPE Structure
Please refer to the related document [1] and [2].	
OMX_IndexParamAudioPortFormat	OMX_AUDIO_PARAM_PORTFORMATTYPE Structure
Please refer to the related document [2].	
OMX_IndexParamAudioWma	OMX_AUDIO_PARAM_WMATYPE Structure
To set or get information regarding WMA.	
OMX_IndexParamAudioPcm	OMX_AUDIO_PARAM_PCMMODETYPE Structure
To set or get information regarding PCM.	

5.2. Expanded Indexes of WMA Standard Decoder Media Component

Table 5-2 shows the list of expanded indexes that are available for WMA Standard Decoder Media Component.

Table 5-2 List of Expanded Indexes available for WMA Standard Decoder Media Component

Index (Expanded Index Name)	Corresponding Strucure Name
Description	
OMXR_MC_IndexParamAudioOutputUnit (OMX.RENESAS.INDEX.PARAM.AUDIO.OUTPUTUNIT)	OMXR_MC_AUDIO_PARAM_OUTPUTUNITTYPE Structure
Please refer to the related document [2].	
OMXR_MC_IndexParamAudioPortSettingMask (OMX.RENESAS.INDEX.PARAM.AUDIO. PORTSETTINGSEVENTMASK)	OMXR_MC_AUDIO_PARAM_PORTSETTINGSEVENTMASK TYPE Structure
Please refer to the related document [2].	

5.3. Indexes Specified by OpenMAX IL Macro Functions

Table 5-3 shows indexes which can be specified by OpenMAX IL Macro functions and available port index for WMA Standard Decoder Media Component.

Table 5-3 Indexes Specified by OpenMAX IL Macro Functions

Index	Get/SetParameter		Get/SetConfig		Port Index	
	Get	Set	Get	Set	APB+0	APB+1
OMX_IndexParamAudioInit	x	x	-	-	-	-
OMX_IndexParamVideoInit	x	x	-	-	-	-
OMX_IndexParamImageInit	x	x	-	-	-	-
OMX_IndexParamOtherInit	x	x	-	-	-	-
OMX_IndexParamStandardComponentRole	x	x	-	-	-	-
OMX_IndexParamCompBufferSupplier	x	x	-	-	x	x
OMX_IndexParamPortDefinition	x	x	-	-	x	x
OMX_IndexParamAudioPortFormat	x	x	-	-	x	x
OMX_IndexParamAudioWma	x	x	-	-	x	-
OMX_IndexParamAudioPcm	x	x	-	-	-	x
OMXR_MC_IndexParamAudioOutputUnit	x	x	-	-	-	x
OMXR_MC_IndexParamAudioPortSettingMask	x	x	-	-	-	x

x : Effective
- : Ineffective

6. Structures

Table 6-1 shows the list of structures of WMA Standard Decoder Media Component.

Table 6-1 Structures of WMA Standard Decoder Media Component

Structure Name	Reference
OMX_AUDIO_PORTDEFINITIONTYPE	Section 6.1
OMX_PARAM_COMPONENTROLETYPE	Related Document [1]
OMX_PARAM_BUFFERSUPPLIERTYPE	Related Document [1]
OMX_AUDIO_PARAM_PORTFORMATTYPE	Section 6.2
OMX_AUDIO_PARAM_WMATYPE	Section 6.3
OMX_AUDIO_PARAM_PCMMODETYPE	Section 6.4
OMXR_MC_AUDIO_PARAM_OUTPUT_UNITTYPE	Related Document [2]
OMXR_MC_AUDIO_PARAM_PORTSETTINGSEVENTMASKTYPE	Related Document [2]

Given below is an explanation of how to interpret the member of the structures described in this section.

- ✓ Description of a member of a structure corresponded to index

[Member]

Member Name	Get	Set
Indicates the member name	Indicates the attribute of the member specified in the OMX_GetParameter () or OMX_GetConfig () function. If "R" is written, the value of this member can be obtained. If "W" is written, please specify a value in this member.	Indicates the attributes of the member specified in the OMX_SetParameter () or OMX_SetConfig () function. If "W" is written, please specify a value in this member. If “-” is written, the value of this member is ignored. Any value specified in this member is not reflected.

6.1. OMX_AUDIO_PORTDEFINITIONTYPE

[Structure] Please refer to section 4.1.5 in the related document [3].

[Function] Please refer to section 4.1.5 in the related document [3].

[Members]

Member Name	Get	Set
cMIMEType	R	-
pNativeRender	R	-
bFlagErrorConcealment	R	-
eEncoding	R	-

[Details]

cMIMEType

Configurable value	-
Acquirable value	NULL
Initial value	NULL
Remarks	Not supported.

pNativeRender

Configurable value	-
Acquirable value	NULL
Initial value	NULL
Remarks	Not supported.

bFlagErrorConcealment

Configurable value	-
Acquirable value	OMX_FLASE
Initial value	OMX_FLASE
Remarks	Not supported.

eEncoding

Configurable value	-	
Acquirable value	**nPortIndex**	**Value**
	APB+0	OMX_AUDIO_CodingWMA
	APB+1	OMX_AUDIO_CodingPCM
Initial value	**nPortIndex**	**Value**
	APB+0	OMX_AUDIO_CodingWMA
	APB+1	OMX_AUDIO_CodingPCM
Remarks	-	

6.2. OMX_AUDIO_PARAM_PORTFORMATTYPE

[Structure] Please refer to section 4.1.6 in the related document [3].

[Function] Please refer to section 4.1.6 in the related document [3].

[Members]

Member Name	Get	Set
nSize	W	W
nVersion	R	-
nPortIndex	W	W
nIndex	W	-
eEncoding	R	-

[Details]

nSize

Configurable value	Specify the size (in bytes) of the OMX_AUDIO_PARAM_PORTFORMATTYPE structure.
Acquirable value	-
Initial value	-
Remarks	-

nVersion

Configurable value	-
Acquirable value	Specification version of OpenMAX IL (1.1.2).
Initial value	Specification version of OpenMAX IL (1.1.2).
Remarks	-

nPortIndex

Configurable value	APB+0 APB+1
Acquirable value	-
Initial value	-
Remarks	-

nIndex

Configurable value	**nPortIndex**	**Value**
	APB+0	0
	APB+1	0
Acquirable value	-	
Initial value	-	
Remarks	-	

eEncoding

Configurable value	-		
Acquirable value	**nPortIndex**	**nIndex**	**Value**
	APB+0	0	OMX_AUDIO_CodingWMA
	APB+1	0	OMX_AUDIO_CodingPCM
Initial value	**nPortIndex**	**nIndex**	**Value**
	APB+0	0	OMX_AUDIO_CodingWMA
	APB+1	0	OMX_AUDIO_CodingPCM
Remarks	-		

6.3. OMX_AUDIO_PARAM_WMATYPE

[Structure] Please refer to section 4.1.11 in the related document [3].

[Function] Please refer to section 4.1.11 in the related document [3].

[Members]

Member Name	Get	Set
nSize	W	W
nVersion	R	-
nPortIndex	W	W
nChannels	R	W
nBitRate	R	W
eFormat	R	-
eProfile	R	-
nSamplingRate	R	W
nBlockAlign	R	W
nEncodeOptions	R	W
nSuperBlockAlign	R	W

[Details]

nSize

Configurable value	Specify the size (in bytes) of the OMX_AUDIO_PARAM_WMATYPE structure.
Acquirable value	-
Initial value	-
Remarks	-

nVersion

Configurable value	-
Acquirable value	Specification version of OpenMAX IL (1.1.2).
Initial value	Specification version of OpenMAX IL (1.1.2).
Remarks	-

nPortIndex

Configurable value	APB+0
Acquirable value	-
Initial value	-
Remarks	-

nChannels

Configurable value	1-2	
Acquirable value	Setting value.	
Initial value	2	
Remarks	**Value**	**Description**
	1	1Channel
	2	2Channels
	This value can be obtained from Type-Specific Data (Number of Channels) of Stream Properties Object (ASF Header Object).	

nBitRate

Configurable value	128 - ((nSmaplingRate * 2 * 8) - 1)
Acquirable value	Setting value.
Initial value	96000
Remarks	This value is obtained by converting Type-Specific Data (Average Number Of Bytes Per Second) of Stream Properties Object (ASF Header Object) in to a bit rate (by multiplying it by 8).

eFormat

Configurable value	-
Acquirable value	OMX_AUDIO_WMAFormat9
Initial value	OMX_AUDIO_WMAFormat9
Remarks	Not supported.

eProfile

Configurable value	-
Acquirable value	OMX_AUDIO_WMAProfileL3
Initial value	OMX_AUDIO_WMAProfileL3
Remarks	Not supported.

nSmaplingRate

Configurable value	8000, 11025, 16000, 22050, 32000, 44100, 48000
Acquirable value	Setting value.
Initial value	48000
Remarks	This value can be obtained from Type-Specific Data (Samples per Second) of Stream Properties Object (ASF Header Object).

nBlockAlign

Configurable value	1 - 0xFFFF
Acquirable value	Setting value.
Initial value	4096
Remarks	This value can be obtained from Type-Specific Data (Block Alignment) of Stream Properties Object (ASF Header Object).

nEncodeOption

Configurable value	0 - 0xFFFF
Acquirable value	Setting value.
Initial value	15
Remarks	This value can be obtained from Type-Specific Data (wEncodeOptions) of Stream Properties Object (ASF Header Object).

nSuperBlockAlign

Configurable value	0 - 0xFFFFFFFF
Acquirable value	Setting value.
Initial value	16384
Remarks	This value can be obtained from Type-Specific Data (dwSuperBlockAlign) of Stream Properties Object (ASF Header Object).

For Stream Properties Object (ASF Header Object) and Type-Specific Data, refer to Advanced Systems Format (ASF) Specification (Related Document [4]).

6.4. OMX_AUDIO_PARAM_PCMMODETYPE

[Structure] Please refer to section 4.1.7 in the related document [3].

[Function] Please refer to section 4.1.7 in the related document [3].

[Members]

Member Name	Get	Set
nSize	W	W
nVersion	R	-
nPortIndex	W	W
nChannels	R	W
eNumData	R	-
eEndian	R	-
bInterleaved	R	-
nBitPerSample	R	-
nSamplingRate	R	W
ePCMMode	R	-
eChannelMapping	R	W

[Details]

nSize

Configurable value	Specify the size (in bytes) of the OMX_AUDIO_PARAM_PCMMODETYPE structure.
Acquirable value	-
Initial value	-
Remarks	-

nVersion

Configurable value	-
Acquirable value	Specification version of OpenMAX IL (1.1.2).
Initial value	Specification version of OpenMAX IL (1.1.2).
Remarks	-

nPortIndex

Configurable value	APB+1
Acquirable value	-
Initial value	-
Remarks	-

nChannels

Configurable value	1, 2
Acquirable value	Setting value or decoded result.
Initial value	2
Remarks	This value does not affect decoding process.

eNumData

Configurable value	-
Acquirable value	OMX_NumericalDataSigned
Initial value	OMX_NumericalDataSigned
Remarks	Not supported.

eEndian

Configurable value	-
Acquirable value	OMX_EndianLittle
Initial value	OMX_EndianLittle
Remarks	Not supported.

bInterleaved

Configurable value	-
Acquirable value	OMX_TRUE
Initial value	OMX_TRUE
Remarks	Not supported.

nBitPerSample

Configurable value	-
Acquirable value	16
Initial value	16
Remarks	Not supported.

nSamplingRate

Configurable value	8000, 11025, 16000, 22050, 32000, 44100, 48000
Acquirable value	Setting value or decoded result.
Initial value	48000
Remarks	This value does not affect decoding process.

ePCMMode

Configurable value	-
Acquirable value	OMX_AUDIO_PCMModeLinear
Initial value	OMX_AUDIO_PCMModeLinear
Remarks	Not supported.

eChannelMapping

Configurable value	OMX_AUDIO_ChannelNone OMX_AUDIO_ChannelLF OMX_AUDIO_ChannelRF OMX_AUDIO_ChannelCF		
Acquirable value	Setting value or decoded result.		
Initial value	eChannelMapping[0]= OMX_AUDIO_ChannelLF eChannelMapping[1]= OMX_AUDIO_ChannelRF		
Remarks	This value does not affect decoding process. The relation among channel of input data, nChannels and eChannelMapping is shown as below.		
	Channel of input data	**nChannles**	**eChannelMapping**
	1 channel	1	eChannelMapping[0]= OMX_AUDIO_ChannelCF
	2 channels	2	eChannelMapping[0]= OMX_AUDIO_ChannelLF eChannelMapping[1]= OMX_AUDIO_ChannelRF

6.5. Structure Members Used in a Unique Manner

Table 6-2 shows structure members used in a unique manner for WMA Standard Decoder Media Component.

Table 6-2 Structure Members Used in a Unique Manner

Structure Name	Member	Usage
OMX_BUFFERHEADERTYPE (refer to section 5.1.1 in the related document [1])	nOffset	Not supported. Specify 0.
	nTickCount	Any value can be specified to the OMX_BUFFERHEADERTYPE structure which is input by the OMX_EmptyThisbuffer( ) function. The value specified in this member is copied into a member of the OMX_BUFFERHEADERTYPE structure which is returned by the (*FillBufferDone)( ) callback function.
	nTimeStamp	Any value can be specified to the OMX_BUFFERHEADERTYPE structure which is input by the OMX_EmptyThisbuffer( ) function. The value specified in this member is used for calculating the output value of corresponding member of the OMX_BUFFERHEADERTYPE structure which is returned by the (*FillBufferDone)( ) callback function.
	nFlags	Please refer to section 6.5.1.

6.5.1. Buffer Flag (nFlags)

The buffer flag (nFlags in the OMX_BUFFERHEADERTYPE structure) for WMA Standard Decoder Media Component is shown as below.

Table 6-3 Buffer Flag for I/O Port

Flag Name (nFlags)	Description for support
OMX_BUFFERFLAG_EOS	This flag can be used as described in the related document [2].
OMX_BUFFERFLAG_STARTTIME	These flags do not affect the processing of Media Component but the flag set to input buffer is transferred to related output buffer.
OMX_BUFFERFLAG_DECODEONLY	
OMX_BUFFERFLAG_DATACORRUPT	This flag is set to output buffer if input stream has an error. If this flag is set, silent data may be stored to output buffer.
OMX_BUFFERFLAG_ENDOFFRAME	Please set this flag when the last of a payload is stored in the input buffer.
OMX_BUFFERFLAG_SYNCFRAME	These flags do not affect the processing of Media Component but the flag set to input buffer is transferred to related output buffer.
OMX_BUFFERFLAG_EXTRADATA	
OMX_BUFFERFLAG_CODECCONFIG	

7. Events

Table 7-1 shows events having a unique condition for WMA Standard Decoder Media Component.

Table 7-1 Events Generation Conditions

Event Type	Port	Condition
OMX_EventPortSettingsChanged	APB+0	Event is not generated.
	APB+1	Event is generated when the member nChannels, nSamplingRate, eChannelMapping in the OMX_AUDIO_PARAM_PCMMODETYPE structure are changed internally by decoding.

If OMXR_MC_AUDIO_UnitFull is set in the OMXR_MC_IndexParamAudioOutputUnit index nChannels, nSamplingRate, eChannelMapping in the OMX_AUDIO_PARAM_PCMMODETYPE structure is changed in WMA Standard Decoder Media Component, a buffer whose size is less than the size of the buffer may be returned.

For the OMX_EventPortSettingChenged event, it is possible to suppress event generation by masking event.Table 7-2 shows maskable information for WMA Standard Decoder Media Component.

Table 7-2List of Maskable Information

Information	Masking Value
nSamplingRate	OMXR_MC_AUDIO_EVENTMASK_SAMPLINGRATE
nChannels	OMXR_MC_AUDIO_EVENTMASK_CHANNELS
eChannelMapping	OMXR_MC_AUDIO_EVENTMASK_CHANNELMAPPING

8. Memory Size

Table 8-1 shows size and purpose of main memory areas used in WMA Standard Decoder Media Component and the value of nBufferSize, nBufferCountAcutal, nBufferCountMin in the OMX_PARAM_PORTDEFINITONTYPE structure.

Table 8-1 Main Memory Areas used in WMA Standard Decoder Media Component

Memory Area Name	Memory Size (byte)			Description
Input Buffer (APB + 0)	**OMX_PARAM_PORTDEFINITIONTYPE**		**Value**	Buffer to store input stream data. This is the size of memory area allocated by the OMX_AllocateBuffer() function.
	nBufferSize	Minimum Size	8192	
		Default Size	8192	
		Maximum Size	8192	
	nBufferCountActual	Minimum Count (= nBufferCountMin)	1	
		Default Count	4	
		Maximum Count	4	
Output Buffer (APB + 1)	**OMX_PARAM_PORTDEFINITIONTYPE**		**Value**	Buffer to store output PCM data. This is the size of memory area allocated by the OMX_AllocateBuffer() function.
	nBufferSize	Minimum Size	8192	
		Default Size	32768	
		Maximum Size	32768	
	nBufferCountActual	Minimum Count (= nBufferCountMin)	1	
		Default Count	8	
		Maximum Count	8	
Internal Work Buffer	66084			Work areas for Media Component and Codec Middleware. This is the size of memory area allocated internally.

- Additionally, areas for such as context and task communication are need.

Revision History	OMX Media Component User's Manual WMA Standard Decoder Part

Rev.	Date	Description	
		Page	Summary
0.01	Dec. 13, 2013	-	Newly created.
0.02	Jan. 15, 2014	-	Correct errors.
0.03	Feb. 20, 2014	24	Add explanation of OMX_PARAM_PORTDEFINITIONTYPE structure in Section 8
0.04	Jun. 3, 2014	- 24	Correct errors. Delete the line of an internal work buffer.
0.10	Jul. 18, 2014	-	Correct errors.
1.00	Oct. 10, 2014	-	Official Release

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