REVISION HISTORY

Linux Interface Specification Device Driver Audio
User's Manual: Software

Rev.	Date		Description
		Page	Summary
0.1	Nov.20, 2015	-	New creation.
0.0	A== 45, 004C	All	Add R-Car M3 support.
0.2	Apr.15, 2016	5	Update related documents.
0.0	Aug. 5, 2016	4	- 1.2.5 Routing
0.3			Add CTU/MIX routing.
		5	- 1.2.9 Channel transfer unit
			Change chapter name.
		6	- 1.4 Restrictions
			Update support functions Rate Continuous, SRC(DT configuration), MIX, CTU and TDM(output).
		7	- 2. Terminology
		/	Add some of terminology and arranged in alphabetical order.
		8	- Table 3.1 Hardware Environment
			Add R-CarM3-Sip System Evaluation Board
		9	- Figure 3.1 Audio Driver configuration
			Update positioning of CTU/MIX modules.
		12	- 4.3 Setting route
			Change route path figures for CTU/MIX modules.
		22	- 4.3.3 Setting route for capture
		27,28	Add description about "shared-pin".
			- 4.4.1 Asynchronous Mode, 4.4.2 Synchronous Mode Add this chapter.
		32	- 4.6 CTU function
			Add details of CTU configurations.
		33	- 4.7 Mix function
			Add details of MIX configurations.
			- 4.8 Amixer control interface
		35	Change chapter name. Add Table 4.4 External Function(CTU) and Table 4.5 External Function(Volume).
		38	- 4.8.2 Example of Control setting
			Add notice for volume setting. Change DVC In/Out setting example from 15% to 12%.
		39	- 4.9 Multi-channel Function
			Add this chapter.
			- old 4.8 Structure
			Remove structures description. All structures change to local.
		42	- 5.2 Integration Procedure
			Add setting default.
		43	- 5.3.3 Device tree bindings
			Add this chapter.

			1 E Notice
0.4	Dec. 16, 2016	6	- 1.5 Notice
			Add description about first playback.
		12	- 4.3 Setting route
			Update description about device tree file.
		27	- 4.4 Sampling Rate Conversion
			Update description and device tree file setting.
		32	- 4.6.1 CTU module setting
			Update device tree file setting.
		33	- 4.7.1 MIX module setting
			Update device tree file setting.
		36	- 4.8.1 Control list
			Add description about volume control name.
		38	- 4.8.2 Example of Control setting
			Fix 'Ex.4)' missing control name 'DVC Out Rate'.
		41	- 5.1 Directory Configuration
			Update directory configurations.
			- 5.2 Integration Procedure
		42	Change "Renesas Sampling Rate Convert Sound Card" to "ASoC Simple SCU sound card suport".
		43	- 5.3.3 Device tree bindings
		43	Add device tree file "r8a7795-es1-salvator-x.dts"
0.5	Mar. 15, 2017	5	- 1.3.2 Related Documents
0.5			Update related documents.
		8	- 3.1 Hardware Environment
		0	Add R-CarH3-SiP/M3-SiP System Evaluation Board Salvator-XS.
		29	- 4.4.2 Synchronous Mode
		23	Add description about rate setting enables.
0.6	Apr. 14, 2017	3,4	- 1.2.3 PCM, 1.2.4 Audio Codec
0.0			Change maximum sampling rate of device's input and output to 192000 Hz.
		2017 3	- 1.2.3 PCM
0.7	Jun. 14, 2017		Change re-sampling rate table, and maximum sampling rate of device's input and output to 48000 Hz.
		<i>A</i>	- 1.2.4 Audio Codec
		4	Add description about max rate at R-CarH3-Sip/M3-Sip System Evaluation Board.
			- 1.3.2 Related Documents
		5	Update related documents (Refer Rev 0.54).
1.00	Aug. 8, 2017	All	Update document format.
		_	- 1.2.10 TDM format
		5	Add chapter.
			- 1.5 Notice
		6	Add description about the PCM output dependency.
			- Table 1-3 PCM function
		6	Add 'Notes' about ALSA-lib conversion.
			I

1.01	Oct. 24, 2017	All	Add R-Car M3N support.
			- 1.5 Notice
		6	Update description about DAC/ADC.
			Add workaround (a) and (b).
		15	- 4.3 Setting route
		13	Update description about device tree file for R-Car M3N.
		41	- 4.8.2 Example of Control setting
		41	Add example of Ramp control.
			- 5.3.3 Device tree bindings
		43	Add device tree file "r8a77965-salvator-x.dts" and "r8a77965-salvator-xs.dts" for R-Car M3N.
1.50	Jan. 29, 2018	1	- 1.2.1 Connected Device
1.50	Jan. 29, 2010	-	Update description about connected by I2C.
		3	- 1.2.3 PCM
		,	Update description about depends on the audio codec.
		5	- 1.2.11 Ramp
		·	Add support Ramp function at MIX and DVC.
		6	- 1.3.2 Related Documents
			Update related documents (Refer Rev 0.80).
		31	- Figure 4.19 Description example of sampling rate setting
			Add settings about cells and reg.
		34	- Figure 4.22 Setting of Rate Continuous
			Update reference structure members.
			- Figure 4.24 Description example of MIX setting
		36	Update to four channel mix case.
			Add settings about cells and reg.
		39	- Table 4-4 External function (Standard)[2/2]
			Add description about more than one SRC devices.
		39	- Table 4-5 External function (CTU) Add description about more than one CTU devices.
			- Table 4-6 External function (MIX)
		39	Add this table.
			- 4.8.2 Ramp function
		40	Add this chapter.
1.51	Mar. 28, 2018	All	Add R-Car E3 support.
1.01	Mai: 20, 2010	7	- 1.2.3 PCM
		5	Update description and command example when using 16-bit data.
		18	- 4.3 Setting route
		10	Add Table 4.3 Device tree files
		48	- 4.8.3 Example of Control setting
		70	Update description about case of using 16-bit data.
		54	- Table 5-1 Device tree binding properties
		•	Add description about "status" sub node.

			- 4.3 Setting route
1.52	Apr. 25, 2018	18	Add "r8a7795-salvator-xs-2x2g.dts" and "r8a7795-salvator-xs-4x2g.dts" Device tree files.
		47	- 4.8.2 DVC function
		47	Add this chapter.
1.53	Jun. 27, 2018	9-12	- 1.5 Notice
1.55	Juli. 27, 2018	9-12	Update workaround (B) along with base code update.
1.54	Sep. 26, 2018	8	- 1.3.2 Related Documents
1.0 1	Gop. 20, 2010		Update related documents (Refer Rev 1.00).
1.55	Oct. 29, 2018	9-11	- 1.5 Notice
	, , , ,		Update example code to kernel "v4.14.70" base.
		23,26,	- 4.3.2 Setting route for playback
		29	(1) to (3) Change default compatible "simple-audio-card" to "audio-graph-card".
		32	- 4.3.2 Setting route for playback
			(4) Update example description for "simple-audio-scu-card".
		35,38, 41	- 4.3.3 Setting route for capture
		41	(1) to (3) Change default compatible "simple-audio-card" to "audio-graph-card".
		60	- 5.1 Directory Configuration
			Add files "audio-graph-card.c" and "audio-graph-scu-card.c".
		61	- 5.2 Integration Procedure Add Support "ASoC Audio Graph sound card" and "ASoC Audio Graph SCU sound
			card".
2.00	Dec. 25, 2018	-	- Update AddressList
		8	- 1.3.2 Related Documents
		0	Update related documents.
		4.4	- 3.1 Hardware Environment Add M3N-SiP System Evaluation Board Salvator-XS.
		14	Add R-CarE3 System Evaluation Board Ebisu-4D.
		58	- 4.9.2 TDM-SSI Function
	47.0040	30	Add description of the number of support channels at TDM.
2.01	Apr. 17, 2019	-	- Update AddressList
		8	- 1.3.2 Related Documents
		8	Update related documents (R-Car Series, 3rd Generation User's Manual: Refer Rev 1.50).
2.50	Dec. 1, 2020	All	- Fix missing description of M3N-SiP and typo.
	·		- 1.5 Notice
		9-11	Update example code to kernel "v5.4.72" base.
			- Figure 4-14, 4-24, 4-25, 4-26, 4-31, 4-32, 4-33, 4-34, 4-35
		All	Update device tree setting example according to kernel "v5.4.72" base.
		41-43	- 4.4 Sampling Rate Conversion
		41-43	Fix description of the difference between aaa and bbb usage examples.
			- 5 Integration
		62-63	Update Figure 5-1 and 5-2, and remove Figure 5-3 according to kernel "v5.4.72" base.
2.51	Aug. 16, 2021	All	Add R-Car D3 support.
		All	Add Kernel v5.10
3.00	Dec. 10, 2021	-	Add Kernel v5.10.41 support
3.1.0	Dec. 25, 2023		- Add Kernel v5.19.194 support for H3, M3, M3N, E
	1		l .