Table of Contents

1. Overview 1

1.1 Overview 1

1.2 Function 1

1.2.1 Connected Device 1

1.2.2 Clock of connected device 4

1.2.3 PCM 7

1.2.4 Audio Codec 8

1.2.5 Routing 8

1.2.6 Sampling Rate Conversion 9

1.2.7 Rate Continuous 9

1.2.8 Mixing 9

1.2.9 Channel transfer unit 9

1.2.10 TDM format 9

1.2.11 Ramp 9

1.3 Reference 9

1.3.1 Standards 9

1.3.2 Related Documents 10

1.4 Restrictions 10

1.5 Notice 10

2. Terminology 14

3. Operating Environment 15

3.1 Hardware Environment 15

3.2 Module Configuration 16

3.3 State Transition Diagram 19

4. External Interface 20

4.1 Device 20

4.2 Device Node 20

4.3 Setting route 21

4.3.1 Data transmission paths 21

4.3.2 Setting route for playback 24

4.3.3 Setting route for capture 49

4.4 Sampling Rate Conversion 64

4.4.1 Asynchronous Mode 64

4.4.2 Synchronous Mode 65

4.5 Rate Continuous 67

4.6 CTU Function 69

4.6.1 CTU module setting 69

4.7 MIX Function 70

4.7.1 MIX module setting 70

4.8 Amixer control interfaces 75

4.8.1 Control list 75

4.8.2 DVC function 78

4.8.3 Ramp function 79

4.8.4 Example of Control setting 80

4.9 Multi-channel Function 82

4.9.1 Multi-SSI Function 82

4.9.2 TDM-SSI Function 82

4.10 Function Specification 84

4.10.1 ALSA API 84

5. Integration 85

5.1 Directory Configuration 85

5.2 Integration Procedure 86

5.3 Option Setting 86

5.3.1 Module Parameters 86

5.3.2 Kernel Parameters 86

5.3.3 Device tree bindings 87