AG35 Series QuecOpen Audio Volume Adjustment API Reference Manual

Automotive Module Series

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About the Document

Revision History

Version	Date	Author	Description
-	2020-08-14	Ewen LI	Creation of the document
1.0	2020-10-12	Ewen LI	First official release

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1 Introduction

Quectel AG35 series supports QuecOpen® solution. QuecOpen® is an open-source embedded development platform based on Linux system, which is intended to simplify the design and development of IoT applications. For more information on QuecOpen®, see ***document [1]***.

This document introduces the APIs through which you can adjust the audio volume of AG35 series in QuecOpen® solution.

2 Audio Volume Adjustment APIs

2.1. Header File Path

The header file *ql_acdb.h* of audio volume adjustment APIs is located in the QuecOpen SDK directory of *ql-ol-sdk/ql-ol-crosstool/sysroots/armv7ahf-neon-oe-linux-gnueabi/usr/include/*.

2.2. Example Path

The use examples, which demonstrate how the APIs are best used, are located in the QuecOpen SDK directory of *ql-ol-sdk/ql-ok-extsdk/example/acdb*.

2.3. API Overview

Table 1: API Overview

Function	Description
ql_audplay_gain_write()	Sets audio playback volume
ql_audplay_gain_read()	Reads audio playback volume
ql_audrd_gain_write()	Sets audio recording volume
ql_audrd_gain_read()	Reads audio recording volume
ql_clvl_write()	Sets downlink call volume level
ql_clvl_read()	Reads downlink call volume level
ql_mic_gain_write()	Sets uplink call gain
ql_mic_gain_read()	Reads uplink call gain

ql_spk_gain_write()	Sets downlink call gain
ql_spk_gain_read()	Reads downlink call gain
ql_audloop_write()	Enables/disables loopback
ql_audloop_read()	Reads the current state of loopback
ql_sidet_write()	Sets sidetone gain
ql_sidet_read()	Reads sidetone gain

NOTE

Unless otherwise specified, all above APIs do not support concurrent calls, and do not call them in any callback function.

2.4. API Description

2.4.1. ql_audplay_gain_write

This function sets the audio playback volume of the module.

- **Prototype**

```
int ql_audplay_gain_write(unsigned short gain);
```

- **Parameter**

gain:
[In] Audio playback volume. Range: 0–65535.

- **Return Value**

0	Set the audio playback volume successfully.
Other values	Failed to set the audio playback volume.

NOTE

A set of examples illustrating the use of the API is available in *example_audplay_gain.c*. Call this API before audio playback, otherwise it cannot take effect immediately.

2.4.2. ql_audplay_gain_read

This function reads audio playback volume of the module.

- **Prototype**

```
int ql_audplay_gain_read(void);
```

- **Parameter**

None.

- **Return Value**

-1	Failed to read the audio playback volume.
Other values	The audio playback volume.

NOTE

A set of examples illustrating the use of the API is available in *example_audplay_gain.c*.

2.4.3. ql_audrd_gain_write

This function sets audio recording volume of the module.

- **Prototype**

```
int ql_audrd_gain_write (unsigned short gain);
```

- **Parameter**

gain:
[In] Audio recording volume. Range: 0–65535.

- **Return Value**

0	Set the audio recording volume successfully.
Other values	Failed to set the audio recording volume.

NOTE

A set of examples illustrating the use of the API is available in *example_audrd_gain.c*. Call this API before audio recording, otherwise it cannot take effect immediately.

2.4.4. ql_audrd_gain_read

This function reads audio recording volume of the module.

- **Prototype**

```
int ql_audplay_gain_read(void);
```

- **Parameter**

None.

- **Return Value**

-1	Failed to read the audio recording volume.
Other values	The audio recording volume.

NOTE

A set of examples illustrating the use of the API is available in *example_audrd_gain.c*.

2.4.5. ql_clvl_write

This function sets the downlink call volume level of the module.

- **Prototype**

```
int ql_clvl_write(unsigned int value);
```

- **Parameter**

value:
[In] The downlink call volume level. Range: 0–5.

- **Return Value**

1	Set the downlink call volume level successfully.
0	Failed to set the downlink call volume level.

NOTE

A set of examples illustrating the use of the API is available in *example_clvl.c*.

2.4.6. ql_clvl_read

This function reads the downlink call volume level of the module.

- **Prototype**

```
int ql_clvl_read(void);
```

- **Parameter**

None.

- **Return Value**

The downlink call volume level of the module.

NOTE

A set of examples illustrating the use of the API is available in *example_clvl.c*.

2.4.7. ql_mic_gain_write

This function sets the uplink call gain to change the uplink call volume of the module.

- **Prototype**

```
int ql_mic_gain_write(unsigned short vol, unsigned short mic_gain);
```

- **Parameter**

vol:
[In] Rear uplink call gains. Range: 0–65535.

mic_gain:
[In] Front uplink call gains. Range: 0–65535.

- **Return Value**

1	Set the uplink call gain successfully.
Other values	Failed to set the uplink call gain.

NOTE

A set of examples illustrating the use of the API is available in *example_qmic.c*. Call this API before a call, otherwise it cannot take effect immediately.

2.4.8. ql_mic_gain_read

This function reads the uplink call gain.

- **Prototype**

```
int ql_mic_gain_read(unsigned int *vol, unsigned int *mic_gain)
```

- **Parameter**

vol:
[Out] Rear uplink call gains. Range: 0–65535.

mic_gain:
[Out] Front uplink call gains. Range: 0–65535.

- **Return Value**

1 Read the uplink call gain successfully.
0 Failed to read the uplink call gain.

NOTE

A set of examples illustrating the use of the API is available in *example_qmic.c*.

2.4.9. ql_spk_gain_write

This function sets the downlink call gain to change the downlink call volume of the module.

- **Prototype**

```
int ql_spk_gain_write(unsigned short spk_gain);
```

- **Parameter**

spk_gain:
[In] The downlink call gain. Range: 0–65535.

- **Return Value**

1	Set the downlink call gain successfully.
Other values	Failed to set the downlink call gain.

NOTE

A set of examples illustrating the use of the API is available in *example_qspk.c*. Call this API before audio recording, otherwise it cannot take effect immediately.

2.4.10. ql_spk_gain_read

This function reads the downlink call gain of the module.

- **Prototype**

```
int ql_spk_gain_read(unsigned int *spk_gain);
```

- **Parameter**

spk_gain:
[Out] The downlink call gain. Range: 0–65535.

- **Return Value**

1	Read the downlink call gain successfully.
0	Failed to read the downlink call gain.

NOTE

A set of examples illustrating the use of the API is available in *example_qspk.c*.

2.4.11. ql_audloop_write

This function enables/disables the loopback.

- **Prototype**

```
int ql_audloop_write(unsigned int value);
```

- **Parameter**

value:
[In] Enables/disables loopback.
0 Disable
1 Enable

- **Return Value**

1 Enabled/disabled loopback successfully.
0 Failed to enable/disable loopback.

NOTE

A set of examples illustrating the use of the API is available in *example_audloop.c*.

2.4.12. ql_audloop_read

This function reads the current state of loopback.

- **Prototype**

```
int ql_audloop_read(void);
```

- **Parameter**

None.

- **Return Value**

1 Loopback enabled.
0 Loopback disabled.

NOTE

A set of examples illustrating the use of the API is available in *example_audloop.c*.

2.4.13. ql_sidet_write

This function sets the sidetone gain.

- **Prototype**

```
int ql_sidet_write(unsigned int value);
```

- **Parameter**

value:
[In] Sidetone gain. Range: 0–65535.

- **Return Value**

1	Set the sidetone gain successfully.
Other values	Failed to set the sidetone gain.

NOTE

A set of examples illustrating the use of the API is available in *example_sidet.c*.

2.4.14. ql_sidet_read

This function reads the sidetone gain.

- **Prototype**

```
int ql_sidet_read(void);
```

- **Parameter**

None.

- **Return Value**

The sidetone gain.

NOTE

A set of examples illustrating the use of the API is available in *example_sidet.c*.

2.5. API Use Examples

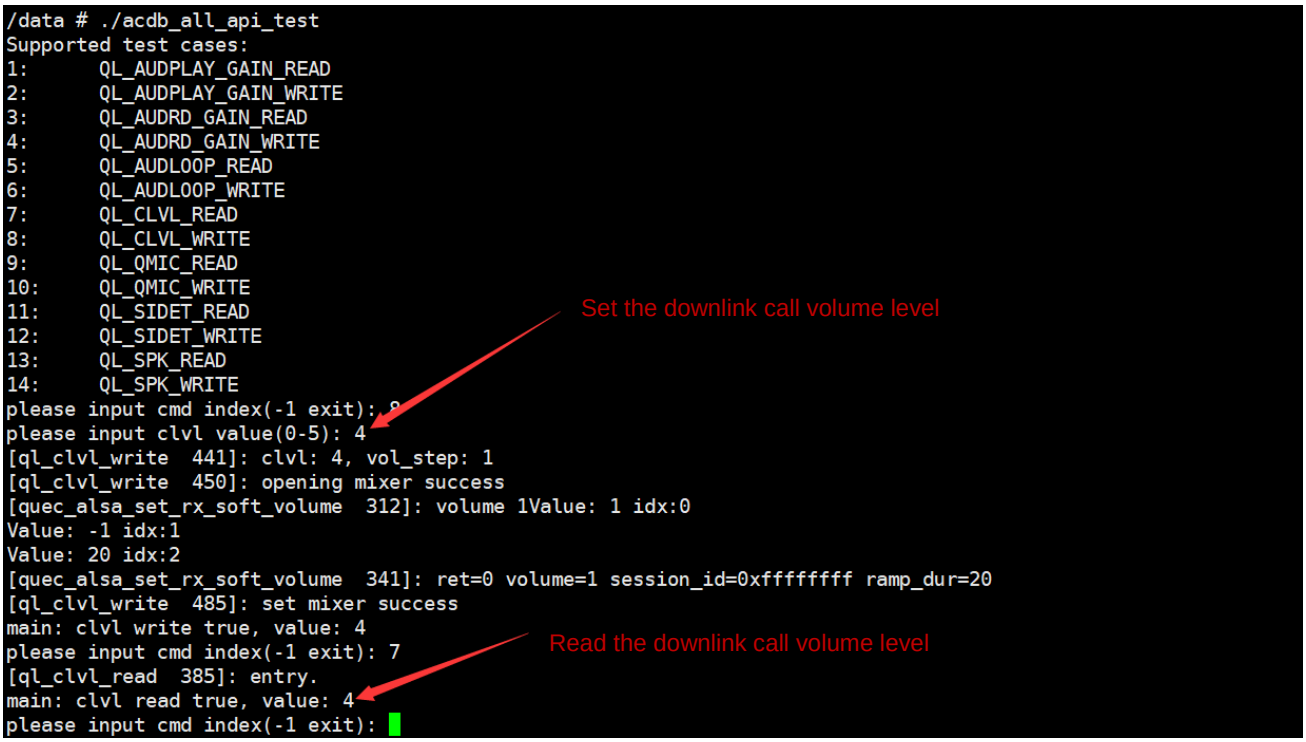
2.5.1. Set/Read Audio Playback Volume

```
/data # ./acdb_all_api_test
Supported test cases:
1:      QL_AUDPLAY_GAIN_READ
2:      QL_AUDPLAY_GAIN_WRITE
3:      QL_AUDRD_GAIN_READ
4:      QL_AUDRD_GAIN_WRITE
5:      QL_AUDLOOP_READ
6:      QL_AUDLOOP_WRITE
7:      QL_CLVL_READ
8:      QL_CLVL_WRITE
9:      QL_QMIC_READ
10:     QL_QMIC_WRITE
11:     QL_SIDET_READ
12:     QL_SIDET_WRITE
13:     QL_SPK_READ
14:     QL_SPK_WRITE
please input cmd index(-1 exit): 2
please input audplay_gain value(0-65535): 65500 <-- Set the audio playback volume
main: audplay gain write true, value: 65500
please input cmd index(-1 exit): 1
main: audplay gain read true, value: 65500 <-- Read the audio playback volume
please input cmd index(-1 exit):
```

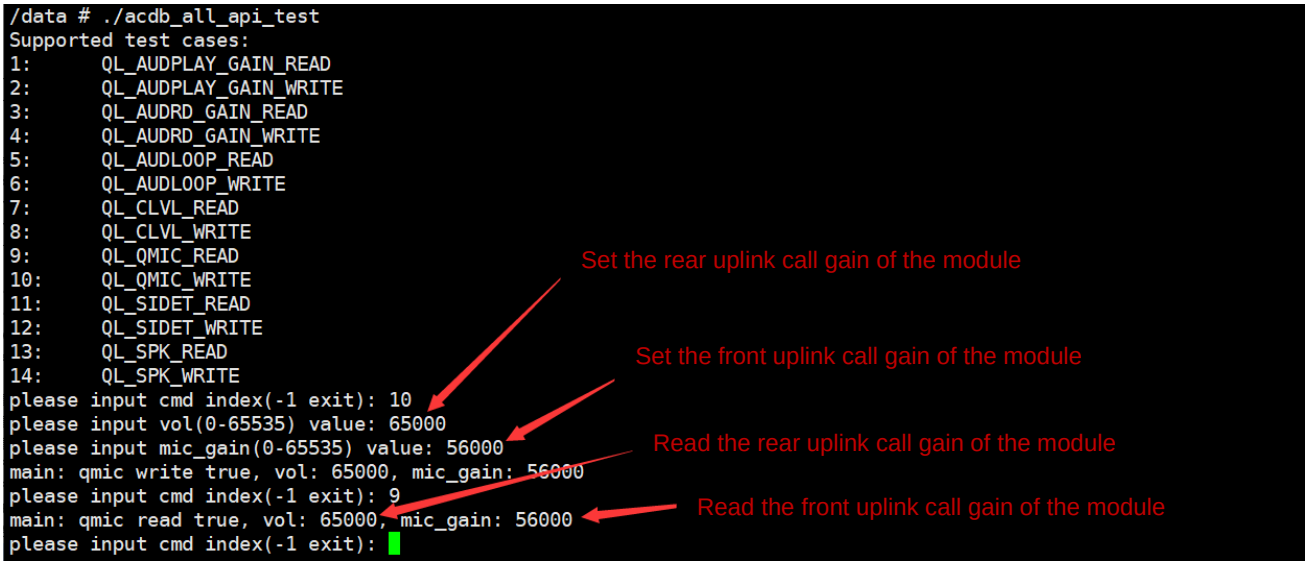
2.5.2. Set/Read Audio Recording Volume

```
/data # ./acdb_all_api_test
Supported test cases:
1:      QL_AUDPLAY_GAIN_READ
2:      QL_AUDPLAY_GAIN_WRITE
3:      QL_AUDRD_GAIN_READ
4:      QL_AUDRD_GAIN_WRITE
5:      QL_AUDLOOP_READ
6:      QL_AUDLOOP_WRITE
7:      QL_CLVL_READ
8:      QL_CLVL_WRITE
9:      QL_QMIC_READ
10:     QL_QMIC_WRITE
11:     QL_SIDET_READ
12:     QL_SIDET_WRITE
13:     QL_SPK_READ
14:     QL_SPK_WRITE
please input cmd index(-1 exit): 4
please input audrd_gain value(0-65535): 55660 <-- Set the audio recording volume
main: audrd gain write true, value: 55660
please input cmd index(-1 exit): 3
main: audrd gain read true, value: 55660 <-- Read the audio recording volume
please input cmd index(-1 exit):
```

2.5.3. Set/Read Call Volume Level



2.5.4. Set/Read Uplink Call Gains



2.5.5. Set/Read Downlink Call Gains

```
/data # ./acdb_all_api_test
Supported test cases:
1:      QL_AUDPLAY_GAIN_READ
2:      QL_AUDPLAY_GAIN_WRITE
3:      QL_AUDRD_GAIN_READ
4:      QL_AUDRD_GAIN_WRITE
5:      QL_AUDLOOP_READ
6:      QL_AUDLOOP_WRITE
7:      QL_CLVL_READ
8:      QL_CLVL_WRITE
9:      QL_QMIC_READ
10:     QL_QMIC_WRITE
11:     QL_SIDET_READ
12:     QL_SIDET_WRITE
13:     QL_SPK_READ
14:     QL_SPK_WRITE
please input cmd index(-1 exit): 14
please input spk gain value (0-65535): 55000
main: qspk write true, spk_gain: 55000
please input cmd index(-1 exit): 13
main: qspk read true, spk_gain: 55000
please input cmd index(-1 exit):
```

Set the downlink call gain of the module

Read the downlink call gain of the module

2.5.6. Enable Loopback

```
/data # ./acdb_all_api_test
Supported test cases:
1:      QL_AUDPLAY_GAIN_READ
2:      QL_AUDPLAY_GAIN_WRITE
3:      QL_AUDRD_GAIN_READ
4:      QL_AUDRD_GAIN_WRITE
5:      QL_AUDLOOP_READ
6:      QL_AUDLOOP_WRITE
7:      QL_CLVL_READ
8:      QL_CLVL_WRITE
9:      QL_QMIC_READ
10:     QL_QMIC_WRITE
11:     QL_SIDET_READ
12:     QL_SIDET_WRITE
13:     QL_SPK_READ
14:     QL_SPK_WRITE
please input cmd index(-1 exit): 6
please input audloop value(0-1): 1
[ql_audloop_write  270]: ql_audloop_write: == QAUDLOOP = 1
main: audloop enable
please input cmd index(-1 exit): 5
main: audloop enable
please input cmd index(-1 exit):
```

Enable the loopback

The current loopback status: enabled

2.5.7. Set/Read Sidetone Gain

```
/data # ./acdb_all_api_test
Supported test cases:
1:      QL_AUDPLAY_GAIN_READ
2:      QL_AUDPLAY_GAIN_WRITE
3:      QL_AUDRD_GAIN_READ
4:      QL_AUDRD_GAIN_WRITE
5:      QL_AUDLOOP_READ
6:      QL_AUDLOOP_WRITE
7:      QL_CLVL_READ
8:      QL_CLVL_WRITE
9:      QL_QMIC_READ
10:     QL_QMIC_WRITE
11:     QL_SIDET_READ
12:     QL_SIDET_WRITE
13:     QL_SPK_READ
14:     QL_SPK_WRITE
please input cmd index(-1 exit): 12
please input sidet value (0-65535): 65535 <-- Set the sidetone gain
quectel_clt_set_mixer_value, device: SEC_AUXPCM_RX Port Mixer SEC_AUX_PCM_UL_TX, value: 1
quectel_clt_set_mixer_value, set mixer: SEC_AUXPCM_RX Port Mixer SEC_AUX_PCM_UL_TX sucess
main: set sidetone: 65535
please input cmd index(-1 exit): 11
main: sidet value: 65535 <-- The sidetone gain is 65535
please input cmd index(-1 exit):
```

3 Appendix A References

Table 1: Related Document

SN	Document Name	Remark
[1]	Quectel_AG35_Series_QuecOpen_Quick_Start_Guide	Quick start guide for QuecOpen solution of AG35 series

Table 2: Terms and Abbreviations

Abbreviation	Description
API	Application Programming Interface
IoT	Internet of Things
SDK	Software Development Kit