CRYSOUND

CRY578

Bluetooth LE Audio Interface

User Manual

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Revision History

Revision Number	Description	Revision Date
1.0	● Initial version	2026/02/25

01 User Notice

Legal Disclaimer

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Compliance

This device has been tested and complies with regulations regarding electronic products. It may cause interference to RF receivers in residential areas, and users are responsible for resolving such interference.

This manual serves solely as a guide for the specific model of the product and may differ from the actual product. Please refer to the physical product itself for accurate information and specifications.

In the event of product version upgrades or other requirements, CRYSOUND may update this manual. The latest version of the manual can be accessed on the official website of CRYSOUND.

Warranty and Calibration

This product is covered by a free warranty repair service for abnormalities or malfunctions within one year from the date of purchase. The free warranty repair service does not cover issues caused by improper use or accidental damage such as drops. Unauthorized disassembly of the product will void warranty.

In case of malfunctions caused by improper use or accidental damage, we offer repair services at cost price. The device is calibrated during the manufacturing process. We recommend sending the device back to the manufacturer for calibration, testing, and maintenance every two years to ensure optimal performance during prolonged use.

Safety Usage Reminder

To prevent potential fire or personal injury, please note:

1. Please carefully read the content of this safety notice before using the product.
2. Only use the product for its designated purpose.
3. Do not disassemble the device without authorization.
4. If the device experiences any malfunctions or abnormal heating, please stop using it.
5. Please contact the manufacturer for device repair services.
6. Do not place the device near heat sources, flames, or in high-temperature environments.

This product includes Bluetooth. The wireless operating frequency bands include:
Bluetooth: 2402 MHz ~ 2480 MHz.

02 Introduction

The CRY578 Bluetooth LE Audio Interface is a Bluetooth device specifically designed for Bluetooth audio and user interface testing. It supports A2DP Source v1.4, AVRCP v1.6, HFP v1.7, and LE Audio (including multi-stream and Auracast features).

Based on the Bluetooth v5.4 protocol, the CRY578 can simultaneously support both Classic Bluetooth and Low Energy audio, making it suitable for R&D laboratories as well as production line testing.

It can be used in conjunction with the CRY6151B electroacoustic analyzer or operated as a standalone module integrated with third-party test systems such as APx500 and SoundCheck.

Users can control the Bluetooth audio adapter via the Sonolab test software or the standalone CRY578 Tool software to perform device discovery, pairing, connection, audio playback, and recording operations.

03 Glossary

A2DP (Advanced Audio Distribution Profile)

A2DP is a Bluetooth profile used for high-quality stereo audio streaming from a source device to a sink device. It defines how compressed audio data (such as SBC, AAC, or other codecs) is transmitted over Classic Bluetooth. A2DP is typically used for music playback applications and supports one-way audio transmission from source to receiver.

HFP (Hands-Free Profile)

HFP is a Bluetooth profile designed for bidirectional voice communication between devices, such as smartphones and headsets or car kits. It enables call control functions (e.g., answer, hang up, redial) and supports narrowband and wideband speech transmission. HFP is commonly used in telephony and hands-free communication scenarios.

AVRCP (Audio/Video Remote Control Profile)

AVRCP is a Bluetooth profile that enables remote control of audio or video playback functions between devices. It allows commands such as play, pause, stop, next track, previous track, and volume control to be transmitted from a controller device to a target device. AVRCP is typically used in conjunction with A2DP for media playback control.

LE Audio (Low Energy Audio)

LE Audio is a next-generation Bluetooth audio architecture based on Bluetooth Low Energy (LE). It introduces the LC3 (Low Complexity Communication Codec) and supports improved audio quality at lower bitrates, lower power consumption, and enhanced flexibility compared to Classic Bluetooth audio. LE Audio also enables new features such as multi-stream audio and broadcast audio.

LE Voice

LE Voice refers to voice communication implemented over Bluetooth Low Energy as part of the LE Audio framework. It uses the LC3 codec to deliver higher speech

quality at reduced power consumption compared to traditional HFP over Classic Bluetooth. LE Voice is designed for next-generation wireless voice applications, including headsets and hearing aids.

Auracast

Auracast is a broadcast audio feature within the LE Audio framework that allows a single transmitter to broadcast audio streams to multiple receivers simultaneously. It enables one-to-many audio sharing without traditional pairing procedures. Auracast is suitable for public venues, assistive listening systems, and shared audio experiences.

DFU (Device Firmware Update)

DFU is a mechanism that allows firmware on a device to be updated without replacing hardware components. It enables the transfer and installation of new firmware images via wired or wireless communication interfaces (such as USB or Bluetooth). DFU is commonly used for bug fixes, feature enhancements, and performance improvements in embedded systems.

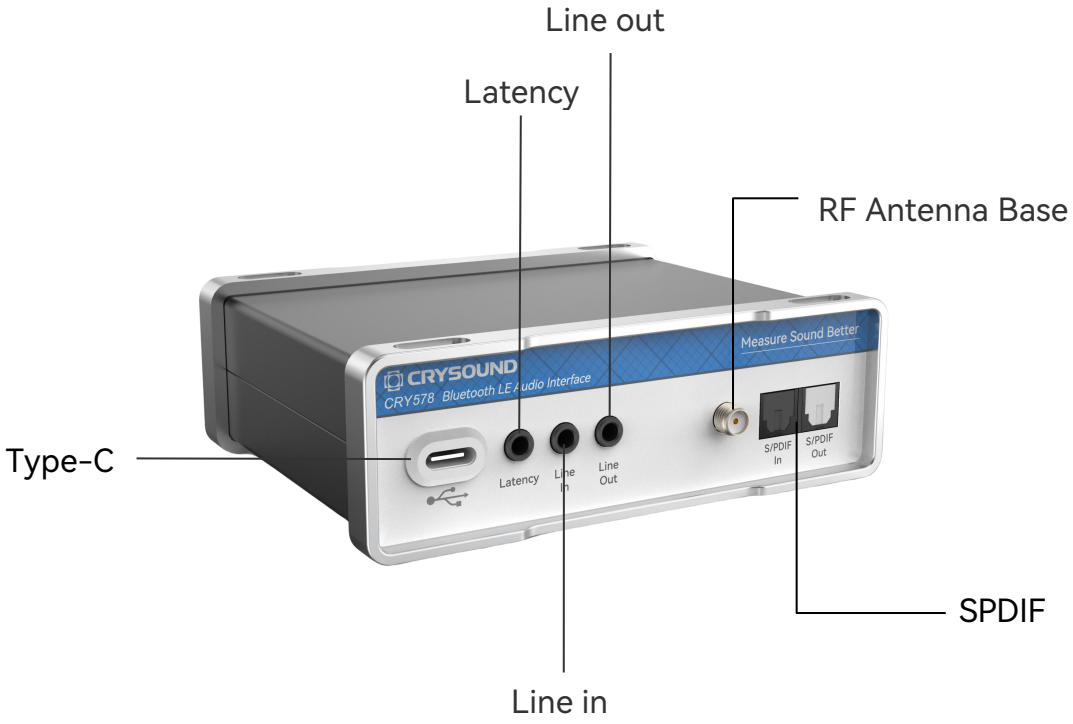
04 Product and Accessories

4.1 Product Accessory List

Item Numbers	Name	Description
1	Bluetooth LE Audio Interface	CRY578
2	RF Antenna	The antenna is used to transmit and receive Bluetooth wireless signals.
3	USB Type-C to USB2.0	Used for device power supply and communication with the host computer.

05 Product Instruction

5.1 Appearance&Port



1 - USB Type-C

The CRY578 connects to a host computer via a USB Type-C interface, which provides both power supply and communication functionality.

2 - Latency

The Latency port outputs the UAC signal path as a reference signal for measuring Bluetooth link latency, thereby eliminating the influence of the host computer system on the latency measurement results.

3 - Line in/out

The Line In and Line Out ports are the device's analog input and output interfaces.

4 - RF Antenna Base

The RF Antenna Base is used to connect an external antenna for the transmission and reception of Bluetooth RF signals.

5 - SPDIF in/out

The SPDIF In and Out ports provide digital audio input and output, enabling convenient integration with AP and other third-party audio test equipment.

6 - LED

The LED indicators show the current operating status of the device:

Solid Red: Idle state

Red and Blue flashing alternately: Searching for Bluetooth devices

Blue flashing: Connecting to a Bluetooth device

Solid Blue: Successfully connected to a Bluetooth device

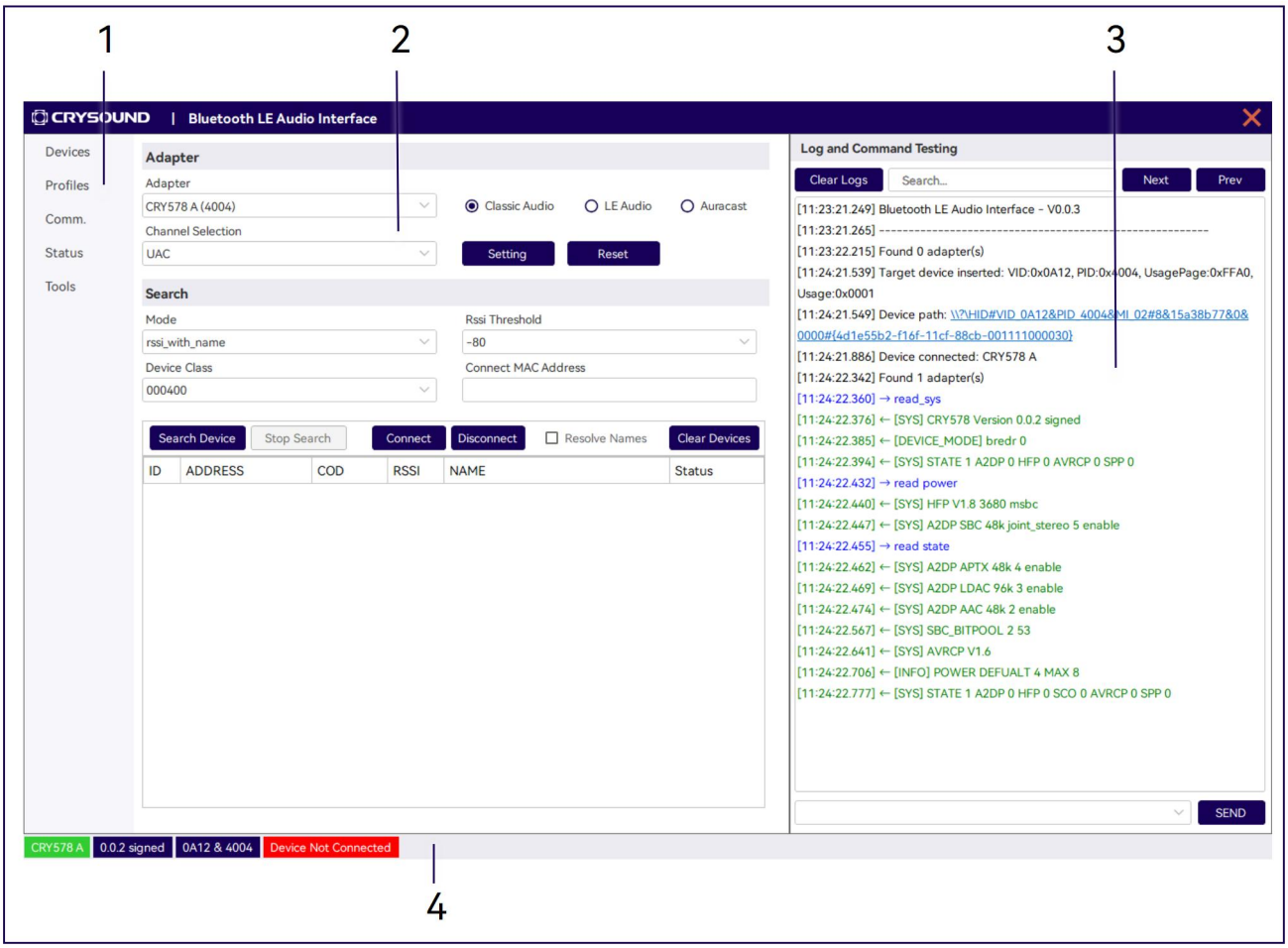
Red flashing: Disconnecting from the Bluetooth device

5.3 Getting Started

After connecting the device to a PC via USB, it will power on automatically. The CRY578 can then be controlled through the utility software (see Section 06, Software Functions) or via serial commands (see Appendix: Serial Command Set) to perform operations such as searching, pairing, connecting, and audio playback for testing purposes.

06 Software Functions

6.1 Main Interface



1 - Navigation Menu

Devices, Profiles, Comm., Status, Tools.

2 - Main Content Area

Switch to the displayed content via the left navigation.

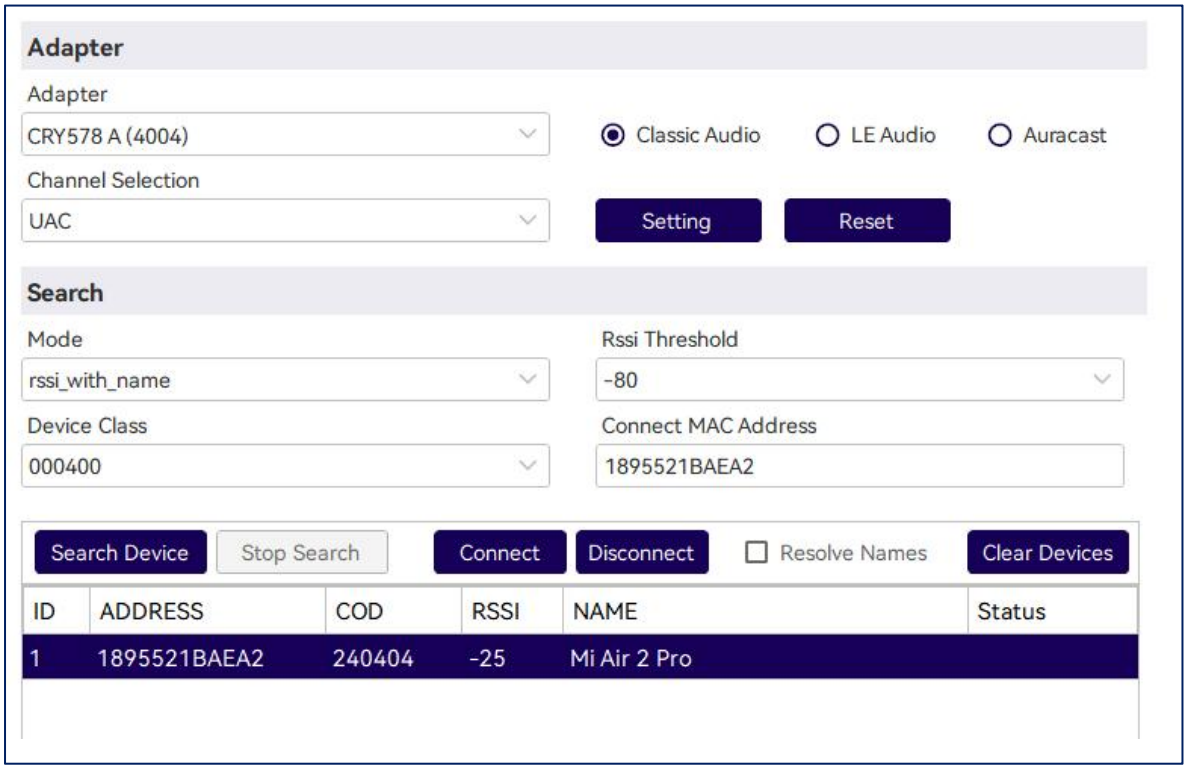
3 - Logs

Display operation logs in real time, with search and command send support.

4 - Status bar

Display key information about the adapter and connected devices.

6.2 Devices Page



Click Devices in the left navigation menu to access this page. This page is for:

- Select and open the adapter.
- Select Bluetooth transfer mode.
- Search for nearby Bluetooth devices.
- Connect or disconnect from the target device.

Adapter region

Adapter List

The software automatically enumerates inserted Adapters after startup. The list refreshes automatically when Adapters are inserted or removed. Selecting an item in the list opens the corresponding Adapter device, and the status bar at the bottom updates Adapter information.

Transport Mode

Classic Audio: Classic Bluetooth (BR/EDR) mode, supporting A2DP, HFP, AVRCP, and SPP protocols.

LE Audio: Low Energy Bluetooth Audio (BLE) mode, supporting LE Audio and LE Voice protocols.

Auracas: Bluetooth broadcast audio mode, broadcasting audio streams to multiple receiving devices.

Setting

Open the Adapter configuration dialog to set Dongle parameters (e.g., transmit power, connection type, etc.). Saved settings will automatically send configuration commands to the Dongle.

Reset

Send a reset command to Dongle to restart it. This is commonly used to restore Dongle to normal operation when it malfunctions.

Search region

Search parameter settings (Classic Audio / LE Audio mode)

Search Mode

Select a search method, such as rssi_with_name.

Rssi Threshold

Filter devices with signal strength below this threshold. Range: -1 to-127 dBm, default: -80 dBm.

Device Class

Filter specific types of Bluetooth devices.

Resolve Names

Select this option to resolve device names during LE mode scanning (available only in BLE mode).

Search Device

Start Bluetooth device scanning and display the found devices in the list below.

Stop Search

Stop the scan.

Clear Devices

Clear the device list without affecting the scan status.

Device List

The scan results are displayed as a list, including MAC address, device type, RSSI signal strength, and device name. Click a row in the list to automatically fill the MAC address into the MAC input fields on both the Devices page and the SPP page, facilitating subsequent connection operations.

Connect MAC Address

Display or manually enter the target device's MAC address. It will be filled in automatically after selecting a device from the list.

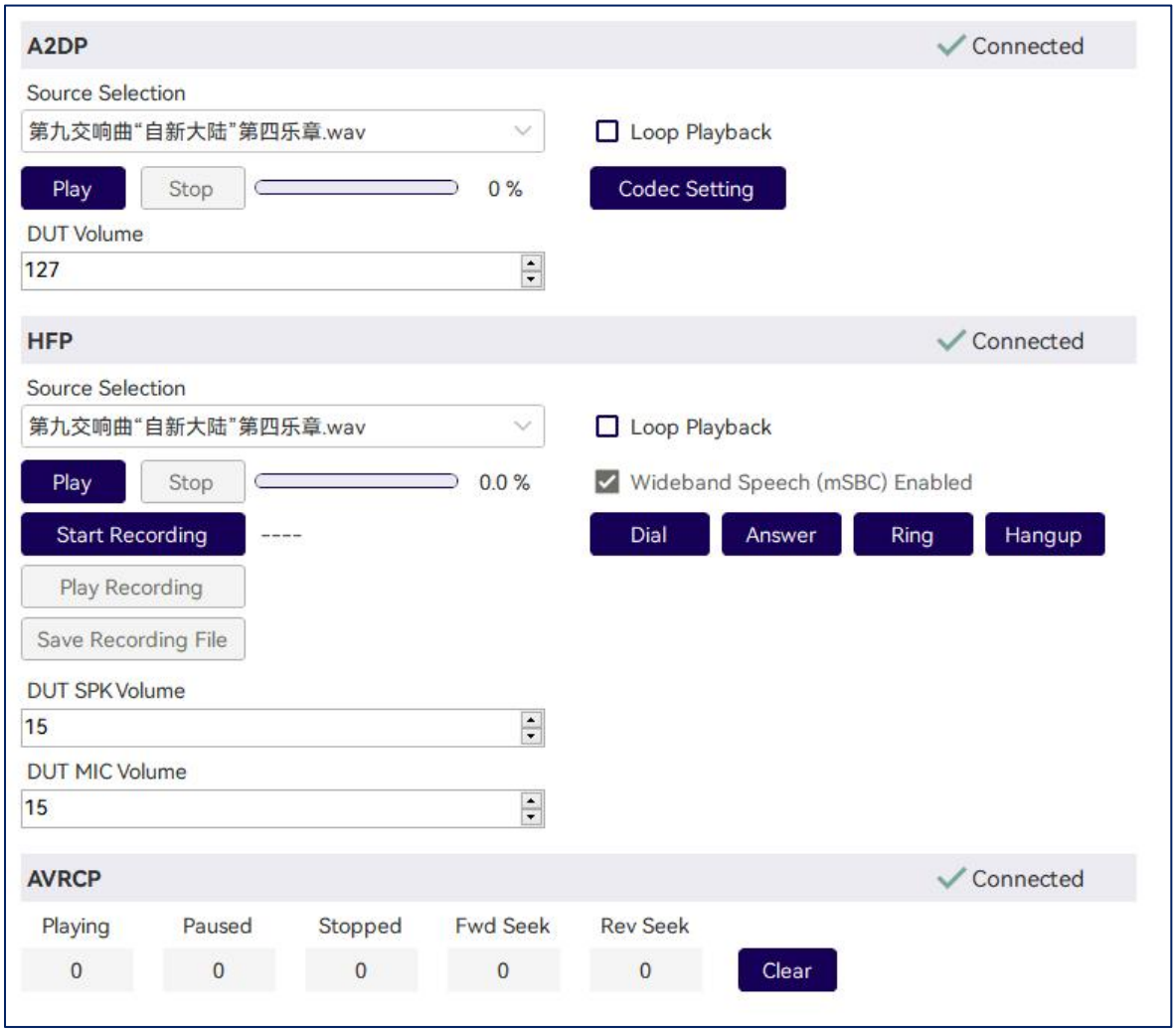
Connect

Establish a Bluetooth connection to the MAC address device in the input box. The audio operation button on the Profiles page will unlock only after the connection is successful.

Disconnect

Disconnect from the current connected device and stop all ongoing audio operations.

6.3 Profile page-Classic mode (BR/EDR)



On the Device page, select Classic Audio under Transport Mode, then click Profiles in the left navigation bar to access this panel.

This page contains three sub-function areas: A2DP, HFP, and AVRCP.

Prerequisite: All operation buttons require the dongle to be turned on and the Bluetooth device to be connected.

A2DP audio playback area

A2DP (Advanced Audio Distribution Profile) is designed for high-quality stereo music playback.

Source Selection

Select the audio file to play.

Loop Playback

Select to play the audio in loop.

Play

Start audio playback. The three-state toggle button: shows "Play" when not playing (click to start); shows "Pause" during playback (click to pause); shows "Cont." while paused (click to resume).

Stop

Stop playing the audio.

DUT Volume

Adjust the playback volume.

Codec Setting

Open the A2DP codec configuration dialog to set parameters such as SBC/aptX encoding modes and sampling rates.

HFP Audio (Analog) Area

HFP (Hands-Free Profile) simulates call scenarios, including playback, recording, and call operations.

Source Selection

Select the audio file to play.

Loop Playback

Select to play the audio in loop.

Play

Play audio with a three-state toggle button: "Play" when not playing (click to start), "Pause" during playback (click to pause), and "Cont." while paused (click to resume). The microphone starts recording automatically when playback begins.

Stop

Stop HFP playback and recording. After stopping recording, it automatically switches to A2DP mode.

DUT SPK Volume

Adjust the HFP speaker volume.

DUT MIC Volume

Adjust the HFP microphone gain.

Wideband Speech (mSBC) Enabled

Select to switch to mSBC codec (16kHz broadband call); deselect to use CVSD (8kHz narrowband).

Start Recording / Stop Recording

Manually start or stop microphone recording. The button text changes according to the status.

Play Recording / Stop Play Recording

Play or stop the recorded temporary audio file. Do not click if the recording is not complete.

Save Recording File

Save the temporary recording as a WAV file in the specified path

Dial

Simulate a dial command. If CRY578 is detected, automatically start HFP recording.

Ring

Simulate a phone call ringing (send the ring command).

Answer

Simulate answering a call (send the answer command). If it is CRY578, HFP recording will start automatically.

Hangup

Simulate a call hangup (send a hangup command). For CRY578, it also stops HFP playback and recording.

AVRCP key count area

The AVRCP (Audio/Video Remote Control Profile) tracks the number of media control button presses received from connected devices.

Playing

Display the number of times the Play button is pressed

Paused

Displays the number of times the Pause key is pressed

Stopped

Display the number of times the Stop key was pressed

Fwd Seek

Display the number of times you pressed the Previous Song button

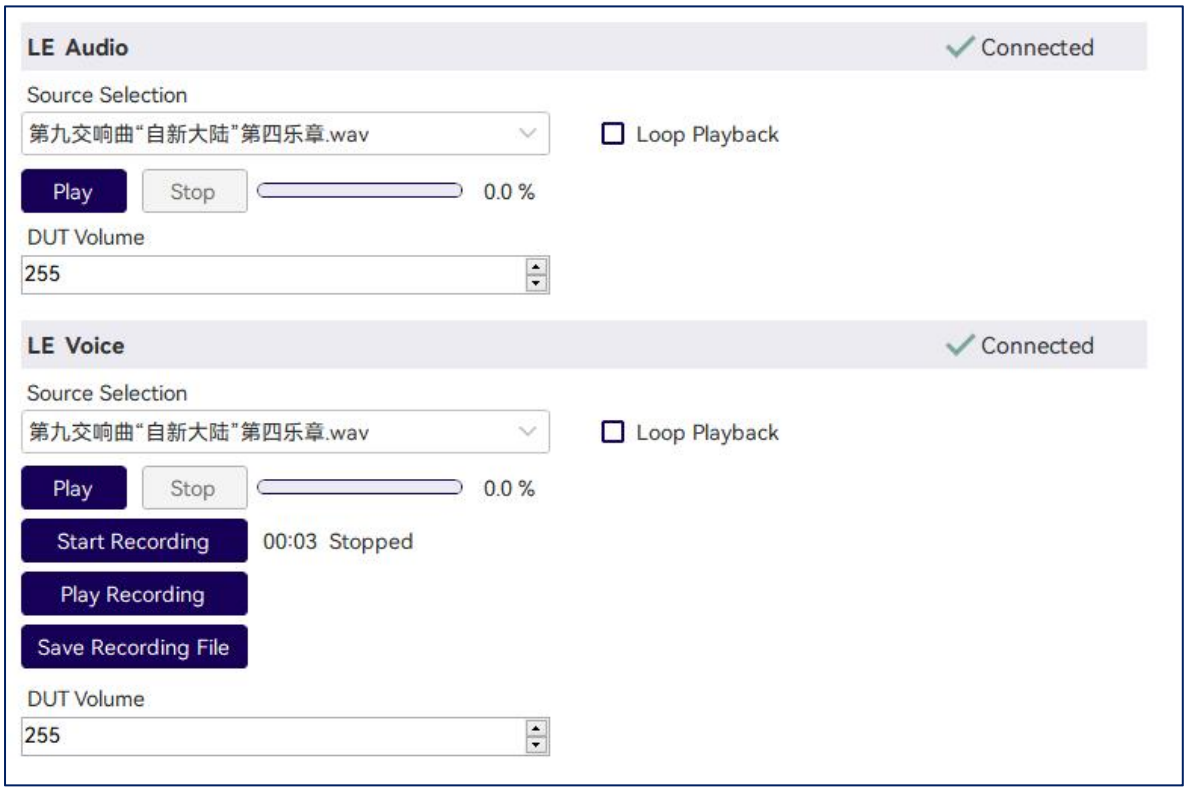
Rev Seek

Display the number of times you press the Next Song button

Clear

Clear all AVRCP key counters

6.4 Profile page-LE Audio mode (BLE)



On the Device page, select LE Audio under Transport Mode, then click Profiles in the left navigation bar to access this panel.
This page contains two sub-function areas: LE Audio (Music) and LE Voice (Call).
Prerequisites: A CRY578 dongle is required and the Bluetooth BLE device must be connected.

LE Audio playback area

Source Selection

Select the audio file to play.

Loop Playback

Select to play the audio in loop.

Play

Start audio playback. The three-state toggle button: shows "Play" when not playing (click to start); shows "Pause" during playback (click to pause); shows "Cont." while paused (click to resume).

Stop

Stop LE Audio playback.

DUT Volume

Adjust the playback volume.

LE Voice

Source Selection

Select the audio file to play.

Loop Playback

Select to play the audio in loop.

Play

Start audio playback. The three-state toggle button: shows "Play" when not playing (click to start); shows "Pause" during playback (click to pause); shows "Cont." while paused (click to resume).

Stop

Stop playing the audio.

Start Recording / Stop Recording

Manually start or stop microphone recording. The button text changes according to the status.

Play Recording / Stop Play Recording

Play or stop the recorded temporary audio file. Do not click if the recording is not complete.

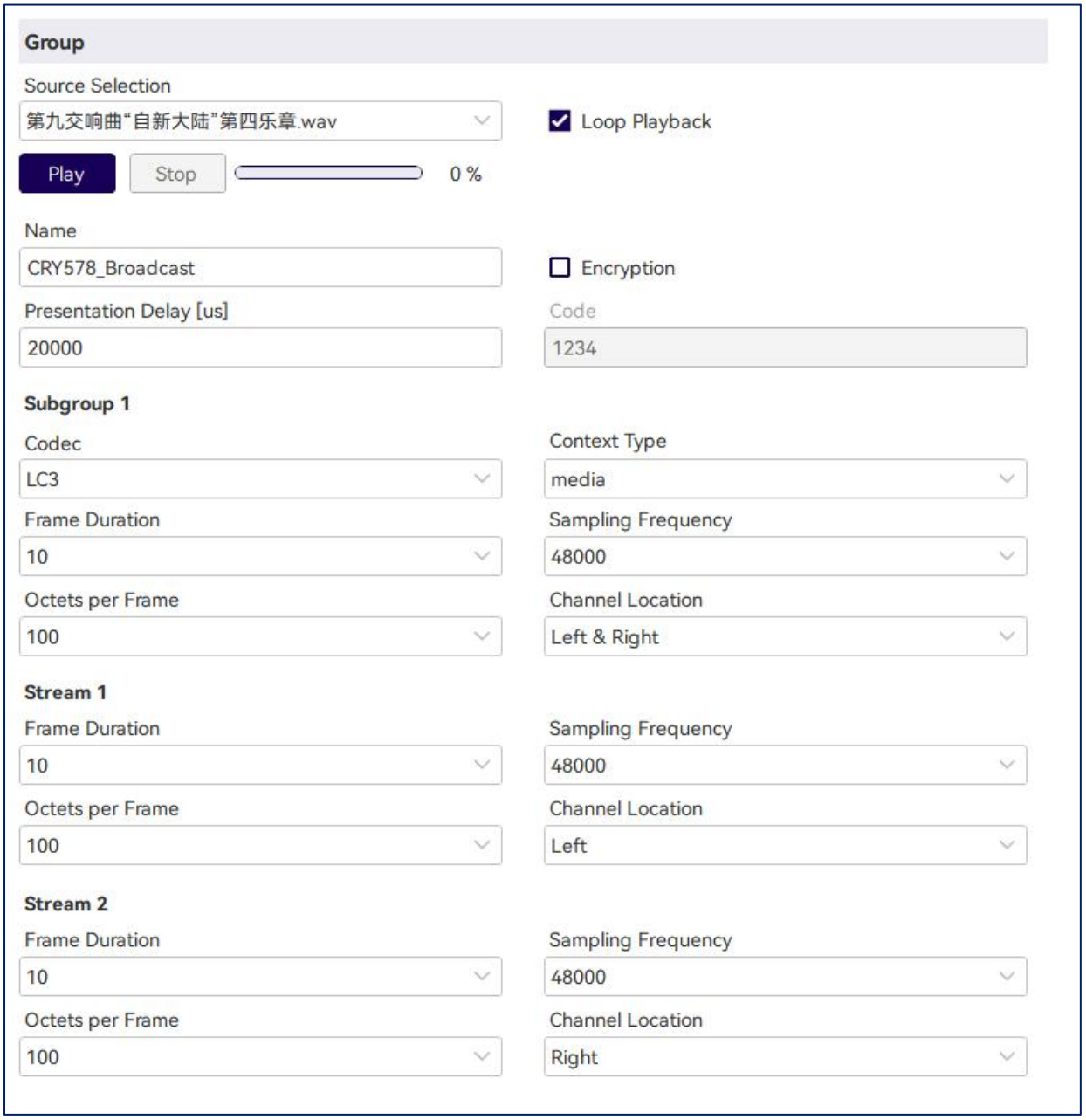
Save Recording File

Save the temporary recording as a WAV file in the specified path

DUT Volume

Adjust the playback volume.

6.5 Profile page-Auracast mode



On the Device page, select Auracast under Transport Mode, then click Profiles in the left navigation bar to access this panel.

Auracast is a Bluetooth audio streaming mode that broadcasts audio to multiple receivers without requiring a one-to-one device connection.

Source Selection

Select the audio file to play.

Loop Playback

Select to play the audio in loop.

Play

Start audio playback. The three-state toggle button: shows "Play" when not playing (click to start); shows "Pause" during playback (click to pause); shows "Cont." while paused (click to resume).

Stop

Stop playing the audio.

Auracast Name

Set the Auracast broadcast name.

Presentation Delay

Set audio delay (in microseconds).

Encryption

Enable Auracast broadcast encryption when checked.

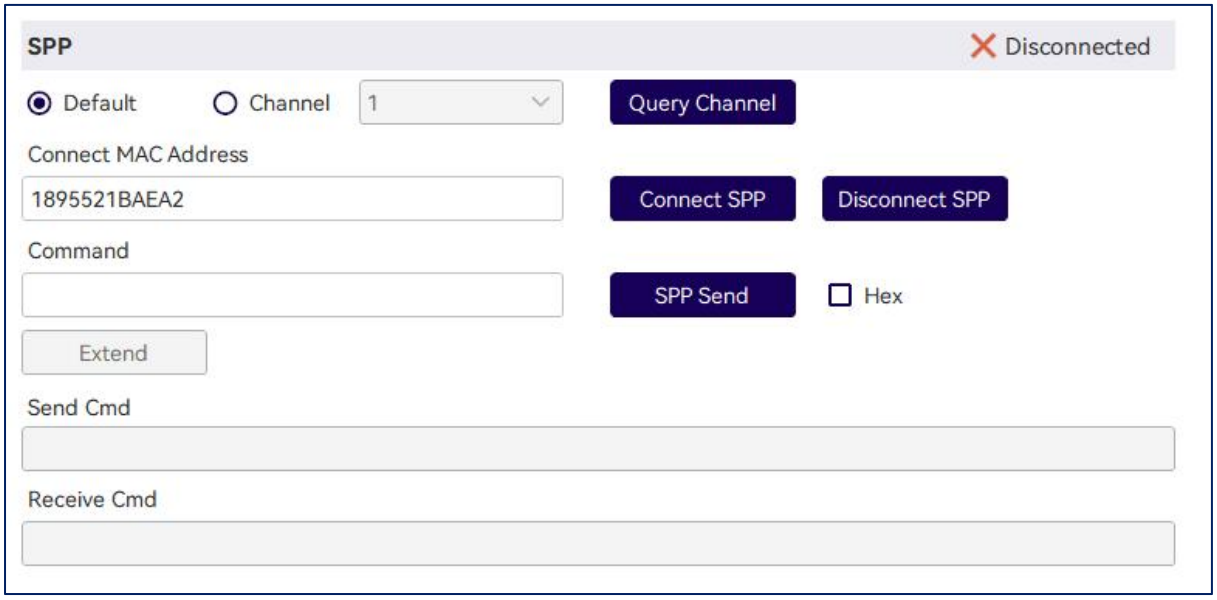
Encryption Code

Enter the encryption key (available only when Encryption is selected).

Subgroup 1 Series Controls

Configure the parameters of the Auracast subgroup, including codec, sampling rate, frame duration, bitrate, and channels.

6.6 Communication Page



Click the Comm. button on the left to enter this page. This page is used to communicate data with connected devices via SPP (Serial Port Profile).
Prerequisite: Dongle is turned on and connected to the target device via SPP.

SPP connection management

Default

Connect to SPP in the default way (automatic channel discovery) after selection

Channel

Connect using the specified Channel number after selection.

Query Channel

Open the SDP query dialog box, automatically query the list of supported SPP Channels for the target device, and select one to fill in the Channel dropdown.

SPP MAC

The MAC address of the target device (automatically populated after selecting a device on the Devices page or entered manually)

Connect SPP

Initiate an SPP connection to the target device using the current settings (Default or specified Channel).

Disconnect SPP

Disconnect the current SPP connection.

SPP data transmission and reception

SPP Cmd

Enter the SPP data content to send.

HEX

When checked, the input box content is sent as hexadecimal bytes; when unchecked, it is sent as an ASCII string.

SPP Send

Send data to the connected device.

Send Cmd

Displays the content of the most recent sent data (format: [S-HEX] or [S-ASCII])

Receive Cmd

Display SPP data received from the device

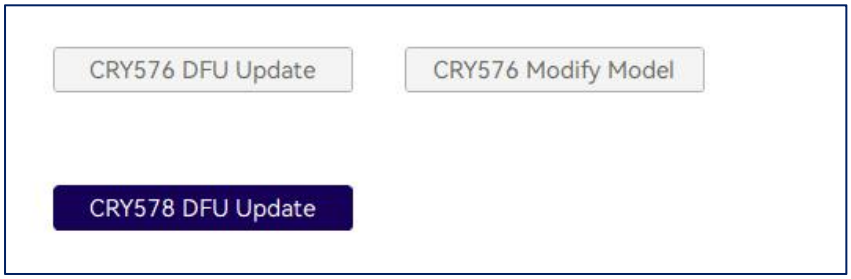
Extend

Expand the feature button (currently empty; keep it for later use).

6.7 Status Page

Click the left navigation Status to enter this page. The current version is empty and will be kept for backup.

6.8 Tools page



Click Tools in the left navigation to enter this page. It provides maintenance tools such as firmware upgrades.

CRY576 DFU Update

Switch the CRY576 Dongle to DFU mode and start the upgrade. This feature is disabled in the current version and will be updated.

CRY576 Modify Model

Modify the model label of the CRY576 Dongle. This feature is disabled in the current version and will be updated.

CRY578 DFU Update

Run the CRY578 firmware upgrade tool (Tool\\DfuTool\\HidDfuApp.exe). The model will automatically switch to CRY578 A before startup.

6.9 Log area

The log area is on the right side of the interface and records all operations and device responses in real time.
With timestamps ([HH:mm:ss.fff]), messages of different types are distinguished by different colors.

Log operation button

Clear Logs

Clear all logs and reset the search status.

Log Search

Enter the keyword to search in the log. The search position resets automatically when you change the input.

Next

Search the log for the keyword in reverse order. When found, highlight it and scroll to the corresponding position.

Prev

Search the log for the keyword in ascending order. When found, highlight it and scroll to the corresponding position.

Log Command

A list of built-in debug commands is available. You can select or manually enter custom commands.

Send

Send the command to the Adapter for execution.

6.10 Bottom status bar

The bottom status bar updates automatically without manual intervention, displaying the following information in real time:

- Adapter connection status
- Adapter firmware version
- Adapter's VID / PID
- Device connection status
- MAC address of the connected device
- Connected device name
- Currently active Bluetooth Profile (A2DP/HFP/LE Audio, etc.)
- The audio codec currently in use (SBC, aptX, LC3, etc.)
- Current audio sampling rate
- Bluetooth version of the connected device
- Name of the chip manufacturer for the connected device

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08 Appendix: Serial Command Set

Serial Communication Parameters	
Baud Rate	115200
Data Bits	8
Parity	none
Stop Bits	1
Flow Control	none

System Serial Commands			
Serial Commands	Parameters	Notices	Examples
read <para>	<para>: link_key|power|state|name|rssi	Get the system status, transmit power, and the connected device's link key, name, and RSSI.	read power read name
read_sys	/	Get system parameters.	read_sys
set_sys hfp <codec>	<codec>:msbc|cvsd		set_sys hfp msbc
set_sys a2dp <codec> <rate> [channal] <priority> <enable>	<codec>:sbc|aac|aptx|ldac <rate>:44.1k|48k [channal]:nomo|joint_stereo <priority>:1~5 <enable>:enable|disable	Used to set codec, sampling rate, channel, priority, and enable or disable. The lower the number, the higher the priority.	set_sys a2dp aac 48k 1 enable
reset cold	/	Restart the device	reset cold
transport_mode <mode>	<mode>:bredr|ble|auracast	Switch the device's operating mode to Classic Bluetooth, Low Energy Bluetooth, or Bluetooth Broadcast.	transport_mode ble
source <para>	<para>:uac|analog|spdif	Switch audio input/output interface.	source analog
BREDR			

inquiry <mode> <RSSI> <Cod>	<mode>:eir|rssi_with_name <RSSI>:-1~-127 <Cod>:000000|000400	Search for Bluetooth devices of specific types with a certain RSSI value.	inquiry rssi_with_name -80 000400
inquiry stop	/	Stop search.	inquiry stop
pair <address>	<address>:mac address	Pair by Bluetooth address.	pair <address>
call <address>	<address>:mac address	Connect by Bluetooth address.	call <address>
disconnect	/	disconnect .	disconnect
clear link_key	/	Clear paired device records.	clear link_key
a2dp_volume <para>	<para>:0~127	Set the a2dp volume.	a2dp_volume 100
hfp_spkvolume <para>	<para>:0~15	Set the HFP downlink volume.	hfp_spkvolume 9
hfp_micgain <para>	<para>:0~15	Set the HFP uplink gain.	hfp_micgain 7
dial	\	Simulate a call.	dial
ring	\	Simulate a phone call ringing.	ring
answer	\	Simulated call connection	answer
hangup	\	Simulate a call hangup.	hangup
switch hfp	\	Switch to HFP mode.	switch hfp
switch a2dp	\	Switch to A2DP mode.	switch a2dp
get_codec	\	Get the current CODEC.	get_codec
get_rate	\	Get the current sampling rate.	get_rate
BLE			
inquiry_ble <RSSI> 1853	<RSSI>:-1~-127	Search for Bluetooth devices that support LE Audio and LE Voice.	inquiry_ble
inquiry_ble stop	\	Stop search.	inquiry_ble stop
call_ble <address>	<address>:mac address	Connect by Bluetooth address.	call_ble

disconnect_ble	\	disconnect	disconnect_ble
clear_link_key_ble	\	Clear paired device records.	clear_link_key_ble
dail_ble	\	Simulate a call.	dail_ble
ring_ble	\	Simulate a phone call ringing.	ring_ble
answer_ble	\	Simulated call connection	answer_ble
hangup_ble	\	Simulate a call hangup.	hangup_ble
le_audio_volume <para>	<para>:0~255	Set the LE Audio volume.	le_audio_volume
le_voice_volume <para>	<para>:0~255	Set the LE Voice volume.	le_voice_volume
broadcast name <para>	<para>:”name”	Set the broadcast name. If the name contains special characters, add double quotes around it.	broadcast name “CRY578 A”
braoadcast code <para>	<para>:123456	Set the broadcast password. The password must be 4 to 16 characters long. A password shorter than 4 characters will not be encrypted.	braoadcast code 0 braoadcast code 1234

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