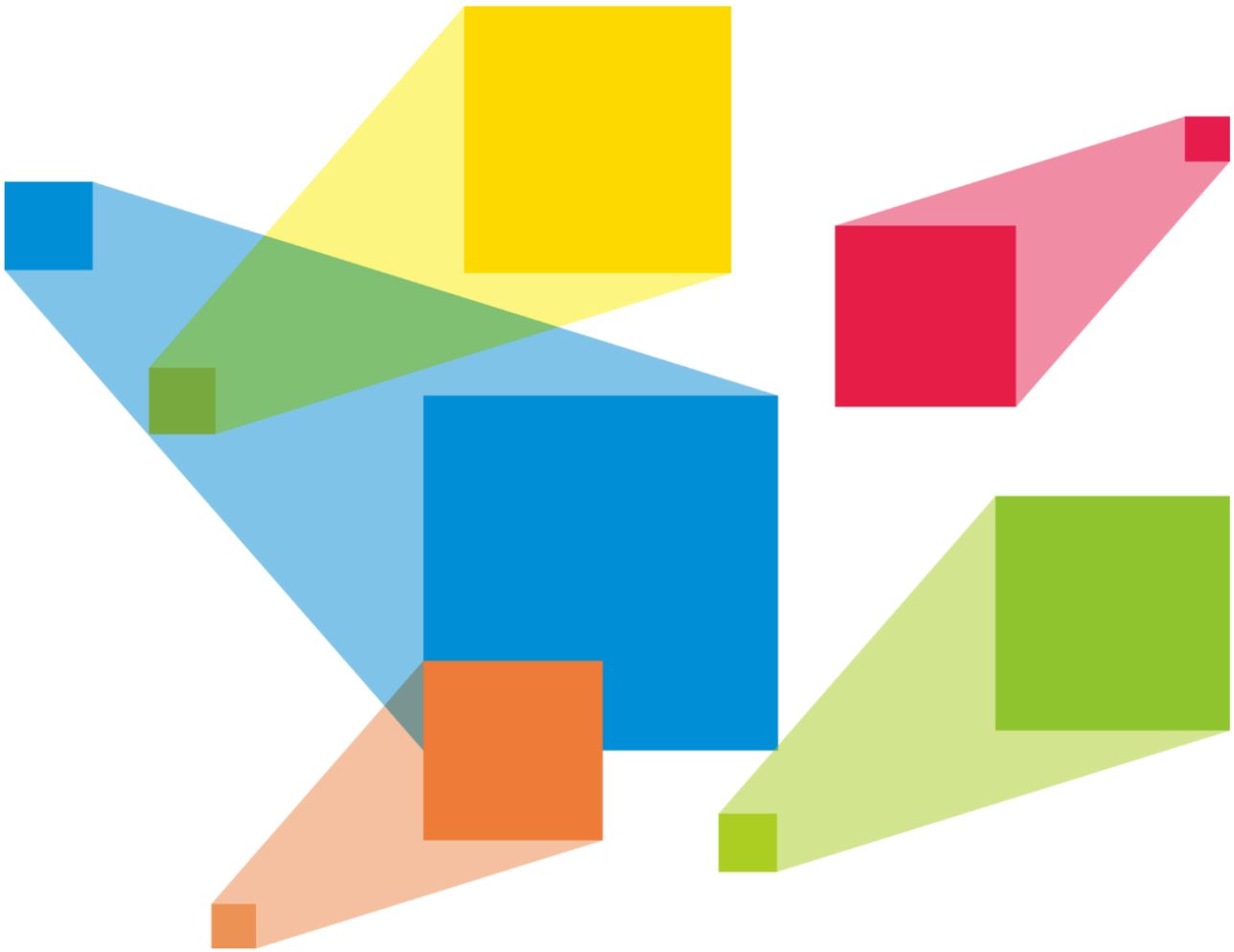
Control Protocol for Multimedia Playback Software

V1.1.8



Contents

1 Change History

Description	Version	Change Date
Add the example in 4.45 Media Fast Forward and Rewind in Chapter 4.	V1.1.8	2024-12-27
Add 4.54 Add or Replace Layer Media in Chapter 4.	V1.1.7	2024-11-06
Modify layer ID to layer index in 4.24 Enable Layer Sound, 4.25 Disable Layer Sound, 4.26 Enable Audio layer Sound and 4.27 Disable Audio layer Sound.	V1.1.6	2024-09-04
Add an example for 24022 tag.	V1.1.5	2024-06-27
Add the functions of pausing/playing/stopping the current program for 365/366/367 tags respectively.	V1.1.4	2024-06-19
• Add 4.52 Control Layer Volume in Chapter 4. • Add 4.53 Query Layer Volume and Mute Status in Chapter 4.	V1.1.3	2024-04-25
• Add 4.51 Query ID of Current Program Played in Stage Editing Area in Chapter 4. • Add descriptions of program ID, program No. and layer No. in Chapter 2. • Add an example in 4.43 Query Layer Playback Progress. • Add an example in 4.36 Control Layer Playback Progress.	V1.1.2	2024-02-19
Add 4.50 Playback Control of PowerPoint or Other Media (Turn Pages) for Specified Layer in Chapter 4.	V1.1.1	2023-11-23
Add the followings: • Play the program by program No. • Pause the program playback by program No. • Stop the program playback by program No.	V1.1.0	2023-11-17

2 Communication Method

The multimedia playback software implements the communication methods such as UDP, TCP, and serial port. The online and offline services of the software only support the UDP communication method. For other services, the remote control terminal will establish communication with the software based on the actual situation.

The default port for UDP communication is 18959, which can be modified in the software.

The port for UDP data reporting is 18961 and cannot be modified.

The default port for TCP communication is 19958, which can be modified in the software.

The default parameters for serial port communication are: baud rate of 115200, data bits of 8, parity of none, and stop bits of 1, which can be modified in the software.

Description of program ID in this protocol: Normally, the program ID starts from 0, which is displayed on the software interface from left to right. If you delete, add, copy or paste a program, the program ID sequence will be disordered. After you restart the software, the program ID will be rearranged from 0. (Program ID of program 1: 0, Program ID of program 2: 1, Program ID of program 3: 2)

Description of program No. in this protocol: The program No. starts from 0, which is displayed on the software interface from left to right. If you delete, add, copy or paste a program, the program No. will not change. (Program No. of program 1: 0, Program No. of program 2: 1, Program No. of program 3: 2)

Description of layer No. in this protocol: The layer No. starts from 0, which is displayed on the software interface from top to bottom. (Layer No. of layer 1: 0, Layer No. of layer 2: 1, Layer No. of layer 3: 2)

3 Frame Structure of Communication Protocol

The frame structure for the data packets related to discovery strategy and control strategy follows the following constraints. The frame structure adopts the little-endian mode, which means that the higher byte of the data is stored in the higher memory address, while the lower byte of the data is stored in the lower memory address.

Name		Size (Byte)	Default Value	Description
Head	Head	4	0x55CC55CC	The communication protocol between the central control device end and media server
	Packet Type	2		Reserved
	Protocol Version	2		The version number of the protocol For example, 0x0101 indicates version 1.1
	Sequence	2		The sequence number of the packet Increment by the sender and start over from 0 when it reaches the maximum.

	Content Length	2		The total length of the content
Content	Tag	2		The service type
	Length	2		The content length of the service data
	Value[]	N		The service data (length is N)

The TLV structure is used in the Content area in the above table. TLV refers to a structure composed of data type (Tag), data length (Length), and data value (Value), which can be used to describe almost any data type. TLV value can also be a TLV structure. It is precisely because of this nesting feature that we can realize the implementation of the protocol.

Note: If value involves a string array, the actual maximum length of valid data is the array length - 1, and the last digit is '\0'.

4 Service Content of Communication Interaction

4.1 Detect Software

Function	**Detect Software**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	255	Can be omitted
	Length		2		
	Value[]	SoftName[]	64		Sender software name (UTF-8 encoding)
	Tag		2	128	
	Length		2		
	Value[]	SoftName[]	64		Sender software name (UTF-8 encoding)
Example	CC 55 CC 55 00 00 01 01 03 00 44 00 80 00 40 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00				
Responder	**Multimedia Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	
	Tag		2	1	

	Length		2		
	Value[]	HostName[]	64		Media server name that contains multimedia playback software (UTF-8 encoding)
		Ip[]	16		Media server IP
		SoftName[]	32		Multimedia playback software name (UTF-8 encoding)
		SoftVersion[]	32		Multimedia playback software version
Example	CC 55 CC 55 01 00 00 01 00 00 94 00 01 00 90 00 31 36 30 30 37 36 39 35 2D 50 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 31 30 2E 34 30 2E 38 33 2E 33 30 00 00 00 00 00 4B 6F 6D 70 61 73 73 20 46 58 33 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 20 56 33 2E 38 2E 30 2E 44 32 2D 32 30 32 33 2D 31 30 2D 31 32 2D 30 39 2D 30 38 00 00 00 00 00				

4.2 Obtain Program Playlist

Function	**Obtain Program Playlist of Multimedia Playback Software**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	255	Can be omitted
	Length		2		
	Value[]	SoftName[]	64		Sender software name (UTF-8 encoding)
	Tag		2	129	
	Length		2		
	Value[]		0		
Example	CC 55 CC 55 01 00 00 01 02 00 04 00 81 00 00 00				
Responder	**Multimedia Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	129	

	Length		2		
	Value[]	ProgramCount[]	4		Total number of programs
		ProgramIndex[]	4		Program ID index (relative to the total number), starting from 0
		ProgramId[]	4		Program ID, starting from 0
		ProgramName[]	128		Program name (UTF-8 encoding)
		IsEmpty[]	1		Indicates whether it is an empty program (0: empty, 1: non-empty)
Example	Total number of programs: 5 Program: 3 Program name: empty Program: non-empty CC 55 CC 55 01 00 00 01 02 00 11 00 81 00 0D 00 05 00 00 00 02 00 00 00 02 00 00 00 01				

4.3 Select Program

Function	**Select Specified Program in Multimedia Playback Software**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	255	Can be omitted
	Length		2		
	Value[]	SoftName[]	64		Sender software name (UTF-8 encoding)
	Tag		2	130	
	Length		2		
	Value[]	ProgramId[]	4		Program ID, starting from 0
Example	Select the program 4: CC 55 CC 55 01 00 00 01 02 00 08 00 82 00 04 00 03 00 00 00				
Responder	**Multimedia Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	130	

	Length		2		
	Value[]				
Example	CC 55 CC 55 01 00 00 01 02 00 04 00 82 00 00 00				

4.4 Send Specified Program to Screen (Fade In and Fade Out)

Function	**Send Specified Program to Screen (Fade In and Fade Out)**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	255	Can be omitted
	Length		2		
	Value[]	SoftName[]	64		Sender software name (UTF-8 encoding)
	Tag		2	131	
	Length		2		
	Value[]	ProgramId[]	4		Program ID, starting from 0
Example	Set fade in and fade out for program 4: CC 55 CC 55 01 00 00 01 02 00 08 00 83 00 04 00 03 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	131	
	Length		2		
	Value[]				
Example	CC 55 CC 55 01 00 00 01 02 00 04 00 83 00 00 00				

4.5 Send Specified Program to Screen (Cut)

Function	**Send Specified Program to Screen (Cut)**			
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name	Length	Default	Description

				Value	
	Tag		2	255	Can be omitted
	Length		2		
	Value[]	SoftName[]	64		Sender software name (UTF-8 encoding)
	Tag		2	132	
	Length		2		
	Value[]	ProgramId[]	4		Program ID, starting from 0
Example	Set cut for program 4: CC 55 CC 55 01 00 00 01 02 00 08 00 84 00 04 00 03 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	132	
	Length		2		
	Value[]				
Example	CC 55 CC 55 01 00 00 01 02 00 04 00 84 00 00 00				

4.6 Pause Program Playback

Function	**Pause Specified Program Playback**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	133	
	Length		2		
	Value[]	ProgramId[]	4		Program ID, starting from 0
Example	Pause the playback of program 4: CC 55 CC 55 01 00 00 01 02 00 08 00 85 00 04 00 03 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response	Name		Length	Default	Description

TLV			Value	
	Tag	2	133	
	Length	2		
	Value[]			
Example	CC 55 CC 55 01 00 00 01 02 00 04 00 85 00 00 00			

4.7 Play Program

Function	**Play Specified Program**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	271	
	Length		2		
	Value[]	Program[]	4		Program ID, starting from 0
Responder	**None**				
Example	Play program 8: CC 55 CC 55 01 00 00 01 02 00 08 00 0F 01 04 00 07 00 00 00				

4.8 Stop Program Playback

Function	**Stop Specified Program Playback**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	272	
	Length		2		
	Value[]	Program[]	4		Program ID, starting from 0
Responder	**None**				
Example	Stop the playback of program 8: CC 55 CC 55 01 00 00 01 02 00 08 00 10 01 04 00 07 00 00 00				

4.9 Go Online

Function	Go Online				
Requester	Playback Software		Request Method	UDP	
Request TLV	Name		Length	Default Value	Description
	Tag		2	1	
	Length		2		
	Value[]	HostName[]	64		The name of the computer where multimedia playback software is installed
		Ip[]	16		The IP of the computer where multimedia playback software is installed
		SoftName[]	32		The name of the multimedia playback software (UTF-8 encoding)
		SoftVersion[]	32		The version of the multimedia playback software
Responder	None				
Example	Media server name: wangy Computer IP address: 192.168.1.1 Software name: empty Software version: v1.1.1 CC 55 CC 55 01 00 00 01 02 00 94 00 01 00 90 00 77 61 6e 67 79 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0 0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 31 39 32 2e 31 36 38 2e 31 2e 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0 0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 76 31 2e 31 2e 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0 0 00				

4.10 Go Offline

Function	Go Offline		
Requester	Playback Software	Request Method	UDP	
Request	Name	Length	Default	Description

TLV				Value	
	Tag		2	2	
	Length		2		
	Value[]	HostName[]	64		The name of the computer where multimedia playback software is installed
		Ip[]	16		The IP of the computer where multimedia playback software is installed
		SoftName[]	32		The name of the multimedia playback software (UTF-8 encoding)
		SoftVersion[]	32		The version of the multimedia playback software
Responder	**None**				
Example	Media server name: wangy Computer IP address: 192.168.1.1 Software name: empty Software version: v1.1.1 CC 55 CC 55 01 00 00 01 02 00 94 00 02 00 90 00 77 61 6e 67 79 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 31 39 32 2e 31 36 38 2e 31 2e 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 76 31 2e 31 2e 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00					

4.11 Update Program

Function	**Update Program**				
Requester	**Playback Software**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	3	
	Length		2		
	Value[]	ProgramCount[]	4		Total number of programs
		ProgramIndex[]	4		Program index (program's position

					in the program list), starting from 0
		ProgramId[]	4		Program ID, starting from 0
		ProgramName[]	128		Program name (UTF-8 encoding)
		IsEmpty[]	1		Indicates whether it is an empty program (0: empty, 1: non-empty)
Responder	**None**				
Example	Total number of programs: 5 Program: 2 Program name: empty Program: non-empty CC 55 CC 55 01 00 00 01 02 00 11 00 03 00 0D 00 05 00 00 00 02 00 00 00 02 00 00 00 01				

4.12 Add Program

Function	**Update Program**				
Requester	**Playback Software**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	5	
	Length		2		
	Value[]	ProgramCount[]	4		Total number of programs
		ProgramIndex[]	4		Program index (program's position in the program list), starting from 0
		ProgramId[]	4		Program ID, starting from 0
		ProgramName[]	128		Program name (UTF-8 encoding)
		IsEmpty[]	1		Indicates whether it is an empty program (0: empty, 1: non-empty)
Responder	**None**				
Example	Total number of programs: 5 Program: 2 Program name: empty Program: non-empty CC 55 CC 55 01 00 00 01 02 00 11 00 05 00 0D 00 05 00 00 00 02 00 00 00 02 00 00 00 01				

4.13 Delete Single Program

Function	**Delete Single Specified Program**				
Requester	**Playback Software**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	6	
	Length		2		
	Value[]	ProgramId[]	4		Program ID, starting from 0
Responder	**None**				
Example	Delete the program 3: CC 55 CC 55 01 00 00 01 02 00 08 00 06 00 04 00 02 00 00 00				

4.14 Delete All Programs

Function	**Delete All Programs**				
Requester	**Playback Software**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	7	
	Length		2		
	Value[]	Data[]	4		Reserved (currently no data)
Responder	**None**				
Example	CC 55 CC 55 01 00 00 01 02 00 08 00 07 00 04 00 00 00 00 00				

4.15 Connect Output

Function	**Connect Output**			
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name	Length	Default Value	Description
	Tag	2	256	

	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Connect output: CC 55 CC 55 01 00 00 01 02 00 04 00 00 01 00 00				

4.16 Disconnect Output

Function	**Disconnect Output**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	257	
	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Disconnect output: CC 55 CC 55 01 00 00 01 02 00 04 00 01 01 00 00				

4.17 Enable Test Pattern

Function	**Enable Test Pattern**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	258	
	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Enable the test pattern: CC 55 CC 55 01 00 00 01 02 00 04 00 02 01 00 00				

4.18 Disable Test Pattern

Function	**Disable Test Pattern**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	259	
	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Disable the text pattern: CC 55 CC 55 01 00 00 01 02 00 04 00 03 01 00 00				

4.19 Enable FTB

Function	**Enable FTB**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	260	
	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Enable FTB: CC 55 CC 55 01 00 00 01 02 00 04 00 04 01 00 00				

4.20 Disable FTB

Function	**Disable FTB**			
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name	Length	Default Value	Description

	Tag		2	261	
	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Disable FTB: CC 55 CC 55 01 00 00 01 02 00 04 00 05 01 00 00				

4.21 Enable Global Sound

Function	**Enable Global Sound**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	262	
	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Enable the global sound: CC 55 CC 55 01 00 00 01 02 00 04 00 06 01 00 00				

4.22 Disable Global Sound

Function	**Disable Global Sound**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	263	
	Length		2	0	
	Value[]	Data[]			
Responder	**None**				
Example	Disable global sound: CC 55 CC 55 01 00 00 01 02 00 04 00 07 01 00 00				

4.23 Adjust Global Volume

Function	**Adjust Global Volume**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	264	
	Length		2		
	Value[]	Volume[]	1		Volume value, ranging from 0 to 100
Responder	**None**				
Example	Set the volume to 50: CC 55 CC 55 01 00 00 01 02 00 05 00 08 01 01 00 32				

4.24 Enable Layer Sound

Function	**Enable Specified Layer Sound**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	265	
	Length		2		
	Value[]	Layer[]	4		Layer index, starting from 0
Responder	**None**				
Example	Enable the sound of layer 2: CC 55 CC 55 01 00 00 01 02 00 08 00 09 01 04 00 01 00 00 00				

4.25 Disable Layer Sound

Function	**Disable Specified Layer Sound**			
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**	
Request	Name	Length	Default	Description

TLV				Value	
	Tag		2	266	
	Length		2		
	Value[]	Layer[]	4		Layer ID, starting from 0
Responder	**None**				
Example	Disable the sound of layer 2: CC 55 CC 55 01 00 00 01 02 00 08 00 0A 01 04 00 01 00 00 00				

4.26 Enable Audio Layer Sound

Function	**Enable Audio Layer Sound**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	267	
	Length		2		
	Value[]	Layer[]	4		Audio layer index The default ID is 07.
Responder	**None**				
Example	Enable the audio layer sound: CC 55 CC 55 01 00 00 01 02 00 08 00 0B 01 04 00 07 00 00 00				

4.27 Disable Audio Layer Sound

Function	**Disable Audio Layer Sound**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	268	
	Length		2		
	Value[]	Layer[]	4		Audio layer index The default ID is 07.

Responder	**None**
Example	Disable the audio layer sound: CC 55 CC 55 01 00 00 01 02 00 08 00 0C 01 04 00 07 00 00 00

4.28 Obtain Layer List

Function	**Obtain Layer List**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	275	
	Length		2	0	
	Value[]	Data[]			
Example	CC 55 CC 55 01 00 00 01 02 00 04 00 13 01 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	275	
	Length		2		Value indicates the layer list. Length is equal to the total number of lists multiplied by the length of a single Value.
	Value[]	LayerId[]	4		Layer index, starting from 0
		LayerName[]	32		Layer name (UTF-8 encoding)
Example	Layer name: empty Layer: 4 CC 55 CC 55 01 00 00 01 02 00 28 00 13 01 24 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00				

4.29 Obtain All Media in Program

Function	**Obtain All Media in Specified Program**		
Requester	**Control Device**	**Request**	**UDP/TCP/Serial Port**

			Method		
Request TLV	Name		Length	Default Value	Description
	Tag		2	276	
	Length		2		
	Value[]	ProgramId[]	4		Program ID
Example	Obtain all media in program 3: CC 55 CC 55 01 00 00 01 02 00 08 00 14 01 04 00 02 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	276	
	Length		2		Value indicates the media list. Length is equal to the total number of lists multiplied by the length of a single Value.
	Value[]	MediaId[]	4		Media ID, starting from 0
		MediaName[]	32		Media name (UTF-8 encoding)
Example	Media name: empty Media: 4 CC 55 CC 55 01 00 00 01 02 00 28 00 14 01 24 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00				

4.30 Play Specified Layer Media in Current Program

Function	**Play Specified Layer Media in Current Program**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	273	
	Length		2		
	Value[]	Index[]	4		The layer number
Responder	**None**				

Example	Play the 2nd layer media in the current program: CC 55 CC 55 01 00 00 01 02 00 08 00 11 01 04 00 01 00 00 00

4.31 Pause Playback of Specified Layer Media in Current Program

Function	**Pause Playback of Specified Layer Media in Current Program**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	274	
	Length		2		
	Value[]	Index[]	4		The layer number
Responder	**None**				
Example	Pause the playback of the 2nd layer media in the current program: CC 55 CC 55 01 00 00 01 02 00 08 00 12 01 04 00 01 00 00 00				

4.32 Enable Sound of Specified Layer Media in Specified Program

Function	**Enable Sound of Specified Layer Media in Specified Program**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	269	
	Length		2		
	Value[]	Col[]	4		The index of the column where the media is located
		Row[]	4		The index of the row where the media is located
Responder	**None**				
Example	Enable the media sound of layer 4 in the program 5: CC 55 CC 55 01 00 00 01 02 00 0C 00 0D 01 08 00 04 00 00 00 03 00 00 00				

4.33 Disable Sound of Specified Layer Media in Specified Program

Function	**Disable Sound of Specified Layer Media in Specified Program**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	270	
	Length		2		
	Value[]	Col[]	4		The index of the column where the media is located
		Row[]	4		The index of the row where the media is located
Responder	**None**				
Example	Disable the media sound of layer 4 in the program 5: CC 55 CC 55 01 00 00 01 02 00 0C 00 0E 01 08 00 04 00 00 00 03 00 00 00				

4.34 Move to Previous PowerPoint Slide

Function	**Move to Previous PowerPoint Slide**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	286	
	Length		2		
	Value[]	TriggerID[]	36		Initiator ID
Example	Move to previous PowerPoint slide: CC 55 CC 55 01 00 00 01 02 00 28 00 1E 01 24 00 4D 58 53 65 72 76 65 72 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	286	

	Length		2		
	Value[]		Bsucceed	1	The execution result 1: success 0: failure
Example	CC 55 CC 55 01 00 00 01 68 00 05 00 1E 01 01 00 01				

4.35 Move to Next PowerPoint Slide

Function	**Move to Next PowerPoint Slide**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	287	
	Length		2		
	Value[]	TriggerID[]	64		Initiator ID
Example	Move to next PowerPoint slide: CC 55 CC 55 01 00 00 01 02 00 28 00 1F 01 24 00 4D 58 53 65 72 76 65 72 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	287	
	Length		2		
	Value[]				
Example	CC 55 CC 55 01 00 00 01 68 00 05 00 1F 01 01 00 01				

4.36 Control Layer Playback Progress

Function	**Control Layer Playback Progress**			
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name	Length	Default Value	Description

	Tag		2	283	
	Length		2		
	Value[]	TriggerID[]	36		Initiator ID
		RemainTime []	4		Remaining time
		TotalTime[]	4		Total time
		layerIndex[]	2		Layer ID
Example	Control the playback progress of the layer 2: CC 55 CC 55 00 00 01 01 E2 28 32 00 1B 01 2E 00 44 43 C3 64 14 C8 6C FA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 BB 00 00 00 CC 00 00 00 01 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	283	
	Length		2		
	Value[]	bsucceed	1		1: success 0: failure
		layerIndex []	2		Layer ID
Example	Returned successfully. CC 55 CC 55 01 00 00 01 0C 00 07 00 1B 01 03 00 01 01 00				

4.37 Query Media Library List Info

Function	**Query Media Library List Info**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	299	
	Length		2		
	Value[]				
Example	Query media library list info: CC 55 CC 55 01 00 00 01 02 00 04 00 2b 01 00 00				

Responder	Playback Software		Response Method	UDP/TCP/Serial Port	
Response TLV	Name		Length	Default Value	Description
	Tag		2	26	
	Length		2		
	Value[]	bsucceed	1		The execution result 1: success 0: failure
		MediaTotal	2		Total number of media resources in the media library
	Tag		2	8	
	Length		2		
	Value[]	MediaName[]	300		Media resource name
		MediaType	1		Media resource type Folder: 0 Image: 1 Video: 2 PowerPoint: 3 Audio: 4 Txt text: 5 NDI: 6 Camera: 7 Local screenshot: 8 Network media path: 9 Web page: 10 Playback collection: 11 Output control instruction: 12
		ResourceId[]	38		Media resource ID
		ParentResourceId[]	38		The ID of the directory where the media resources are located
		Width	4		The width of the media resource
		Height	4		The height of the media resource

		Index	2		The location index of media resources under the same directory in the media library
Example	CC 55 CC 55 01 00 00 01 00 00 8E 01 1A 00 03 00 01 01 00 08 00 83 01 67 69 72 6C 2E 6D 70 34 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 02 7B 33 64 61 35 30 34 66 32 2D 64 39 35 66 2D 34 39 65 38 2D 39 33 33 30 2D 37 65 39 38 31 65 33 37 34 63 62 66 7D 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0F 00 00 70 08 00 00 00 00				

4.38 Refresh Web Page

Function	**Refresh Web Page of Specified Layer**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	327	
	Length		2		
	Value[]	Layer[]	4		Layer ID, starting from 0
Responder	**None**				
Example	Refresh the web page of layer 2: CC 55 CC 55 01 00 00 01 02 00 08 00 47 01 04 00 01 00 00 00				

4.39 Increase Global Volume

Function	**Increase Global Volume**		
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**

Request TLV	Name		Length	Default Value	Description
	Tag		2	328	
	Length		2		
	Value[]	Volume[]	4		Volume value The stepping is 1.
Responder	**None**				
Example	Increase the global volume by 1: CC 55 CC 55 01 00 00 01 02 00 08 00 48 01 04 00 01 00 00 00				

4.40 Decrease Global Volume

Function	**Decrease Global Volume**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	329	
	Length		2		
	Value[]	Volume[]	4		Volume value The stepping is 1.
Responder	**None**				
Example	Decrease the global volume by 1: CC 55 CC 55 01 00 00 01 02 00 08 00 49 01 04 00 01 00 00 00				

4.41 Client End Device Name

Function	**Client End Device Name**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	309	
	Length		2		
	Value[]	TriggerID[]	36		Initiator ID

Function	Client End Device Name				
		DeviceName[]	32		Device type name (recommended to be AVMP)
Example	Client end device name: cc55cc55010000001000048003501440058 4f543c744246f6a99ed27f761c916 10000000000000000000000000000000000000000041564d5000000000000000 00000000000000000000000000000000000000000000				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	309	
	Length		2		
	Value[]	bsucceed	1		1: success 0: failure
Example	CC 55 CC 55 01 00 00 01 0C 00 07 00 1B 01 03 00 01 00 00				

4.42 Stage Preview Image

Function	**Before using this command, please send the 309 command in section 4.41 to the multimedia playback software.** **The multimedia playback software sends the stage image, please note:** **1. The receiving end needs to firstly connect to the TCP port of External Control in the multimedia playback software, and then send the 309 command.** **2. The receiving end connects to the TCP 19978 port in the multimedia playback software.** **3. This command does not use the control protocol for docking, but has a special header (the following data is sent directly after the TCP connection).**			
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name	Length	Default Value	Description
	Head	4	0x66FF66FF	Little endian
	ProtocolVersion	2	0x0100	
	dataType[]	16	"jpg"	
	DataLength[]			The size of the Data

				jpg image
	Data			The binary data of the jpg image
Example	ff66ff6600016a706700000000000000000000000000e3780000ffd8.....ffd9			

4.43 Query Layer Playback Progress

Function	**Query Layer Playback Progress**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	293	
	Length		2		
	Value[]	LayerIndex	2		Layer index
Example	Query playback progress of layer 2: CC 55 CC 55 01 00 00 01 02 00 06 00 25 01 02 00 01 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	28	
	Length		2		
	Value[]	Bsucceed	1		The execution result 1: success 0: failure
		Index	2		Layer index
		RemainTime	4		Remaining time (unit: s)
		TotalTime	4		Total time (unit: s)
Example	Layer: Layer 2 Remaining time: 60s Total time: 204s CC 55 CC 55 01 00 00 01 99 00 0F 00 1C 00 0B 00 01 01 00 3C 00 00 00 CC 00 00 00				

4.44 Shut Down or Restart Control Device

Function	**Shut Down or Restart Control Device**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	24022	
	Length		2		
	Value[]	ShutdownMode	2		Shutdown mode: 0: shut down 1: restart
Example	Restart: cc 55 cc 55 01 00 00 01 02 00 06 00 d6 5d 02 00 01 00 Shut down: cc 55 cc 55 01 00 00 01 02 00 06 00 d6 5d 02 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	24022	
	Length		2		
	Value[]	Bsucceed	1		The execution result 1: success 0: failure
Example					

4.45 Media Fast Forward and Rewind

Function	**Media Fast Forward and Rewind**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	342	
	Length		2		The length of JSON string
	Value[]				{

Function	Media Fast Forward and Rewind				
Requester	Control Device		Request Method	UDP/TCP/Serial Port	
					"layerIndex":3, "seekType":0, "seekTime":10 } LayerIndex: Layer index seekType: 0 fast forward; 1 rewind seekTime: Fast forward or rewind time (unit: s)
Responder	None				
Example	Fast forward Layer 1 by 10s: *The first 30 represents ASCII "0" in hexadecimal, indicating Layer index 0. To target Layer 2, change this to 31.* *The second 30 represents ASCII "0" in hexadecimal, where 0 means fast forward. For rewind, change this to 31.* *The third pair 31 30 represents ASCII "10" in hexadecimal. To fast forward by 5 seconds, change this to 30 35.* cc 55 cc 55 01 00 00 01 02 00 37 00 56 01 33 00 7B 0D 0A 22 6C 61 79 65 72 49 6E 64 65 78 22 3A **30** 2C 0D 0A 22 73 65 65 6B 54 79 70 65 22 3A **30** 2C 0D 0A 22 73 65 65 6B 54 69 6D 65 22 3A **31 30** 0D 0A 7D				

4.46 Shut Down and Restart Multimedia Playback Software

Function	Shut Down and Restart Multimedia Playback Software				
Requester	Control Device		Request Method	UDP/TCP/Serial Port	
Request TLV	Name		Length	Default Value	Description
	Tag		2	339	
	Length		2		The length of JSON string
	Value[]		1		0: restart 1: shut down
Responder	None				

Function	Shut Down and Restart Multimedia Playback Software		
Requester	**Control Device**	**Request Method**	**UDP/TCP/Serial Port**
Example	Shut down the multimedia playback software: cc 55 cc 55 01 00 00 01 02 00 05 00 53 01 01 00 01		

4.47 Pause Specified or Current Program Playback by Program No.

Function	Pause Specified or Current Program Playback				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	365	
	Length		2		
	Value[]	Program[]	4		Program index, starting from 0 -1: Pause the current program playback.
Responder	**None**				
Example	Pause the playback of program 8: CC 55 CC 55 01 00 00 01 02 00 08 00 6D 01 04 00 07 00 00 00 Pause the playback of the current program: CC 55 CC 55 01 00 00 01 02 00 08 00 6D 01 04 00 ff ff ff ff				

4.48 Play Specified or Current Program by Program No.

Function	Play Specified or Current Program				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	366	
	Length		2		
	Value[]	Program[]	4		Program index, starting from 0 -1: Play the current program.

Responder	**None**
Example	Play the program 8: CC 55 CC 55 01 00 00 01 02 00 08 00 6E 01 04 00 07 00 00 00 Play the current program: CC 55 CC 55 01 00 00 01 02 00 08 00 6E 01 04 00 ff ff ff ff

4.49 Stop Specified or Current Program Playback by Program No.

Function	**Stop Specified or Current Program Playback**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	367	
	Length		2		
	Value[]	Program[]	4		Program index, starting from 0 -1: Stop the current program playback.
Responder	**None**				
Example	Stop the playback of program 8: CC 55 CC 55 01 00 00 01 02 00 08 00 6F 01 04 00 07 00 00 00 Stop the playback of the current program: CC 55 CC 55 01 00 00 01 02 00 08 00 6F 01 04 00 ff ff ff ff				

4.50 Playback Control of PowerPoint or Other Media (Turn Pages) for Specified Layer

Function	**Turn Pages for PowerPoint/Excel/PDF/Word/Media Collections**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	364	
	Length		2		
	Value[]	LayerIndex	2		Layer index

		operationType	1		The operation types include: 1. Previous page (supported media types: PowerPoint files, media collection) 2. Next page (supported media types: PowerPoint files, media collection)
Responder	**None**				
Example	Go to the previous page of the layer3: cc 55 cc 55 01 00 00 01 02 00 07 00 6c 01 03 00 02 00 01				

4.51 Query ID of Current Program Played in Stage Editing Area

Function	**Query ID of Current Program Played in Stage Editing Area**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	294	
	Length		2		
	Value[]				
Example	CC 55 CC 55 01 00 00 01 02 00 04 00 26 01 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	29	
	Length		2		
	Value[]	Bsucceed	1		The execution result 1: success 0: failure
		ProgramId	4		Program ID -1: No program
		ProgState	4		0: Play

					1: Pause 2: Stop
Example	Program ID: 1 Playback status: Play CC 55 CC 55 01 00 00 01 2E 00 0D 00 1D 00 09 00 01 01 00 00 00 00 00 00 00 Program ID: 2 Playback status: Pause CC 55 CC 55 01 00 00 01 2E 00 0D 00 1D 00 09 00 01 02 00 00 00 01 00 00 00				

4.52 Control Layer Volume

Function	**Control Layer Volume**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	316	
	Length		2		
	Value[]	TriggerID[]	36		Initiator ID
		LayerIndex	2		Layer index
		LayerVolume	1		Layer volume value, ranging from 0 to 100
Example	Set layer 2 volume to 56. CC 55 CC 55 00 00 01 01 FC 11 2B 00 3C 01 27 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 00 38				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	316	
	Length		2		
	Value[]	Bsucceed	1		The execution result 1: success 0: failure

4.53 Query Layer Volume and Mute Status

Function	**Query Layer Volume and Mute Status**				
Requester	**Control Device**		**Request Method**	**UDP/TCP/Serial Port**	
Request TLV	Name		Length	Default Value	Description
	Tag		2	322	
	Length		2		
	Value[]	LayerIndex	2		Layer index, starting from 0
Example	Query volume status of layer 2 CC 55 CC 55 00 00 01 01 56 04 06 00 42 01 02 00 01 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description
	Tag		2	322	
	Length		2		
	Value[]	Bsucceed	1		The execution result 1: success 0: failure
		LayerIndex	2		Layer index
		Volume	1		Volume value
		MuteFlag	1		Mute or unmute 1: Mute 0: Unmute
Example	Layer: Layer 2 Volume: 55 Unmute CC 55 CC 55 01 00 00 01 0D 00 09 00 42 01 05 00 01 01 00 37 00				

4.54 Add or Replace Layer Media

Function	**Add or Replace Layer Media**		
Requester	**Control Device**	**Request**	**UDP/TCP/Serial Port**

			Method		
Request TLV	Name		Length	Default Value	Description
	Tag		2	345	
	Length		2		
	Value[]	LayerIndex	2		Layer index (0 if create=1)
		Xcoor	4		X coordinate (0 if create=0)
		Ycoor	4		Y coordinate (0 if create=0)
		Width	4		Layer width (0 if create=0)
		Height	4		Layer height (0 if create=0)
		Rotate	2		Layer rotation degree (0 if create=1)
		z	2		Layer z-order
		TriggerID[]	36		Initiator ID
		create	1		Initial media resource flag (1=initialize, 0=replace)
		ResourceId[]	38		Replacement media resource ID (**must be obtained from 4.37 Query Media Library List Info**)
		ProgramIndex	4		Program index
Example	Query volume status for Layer 2: 01 00: Layer index 7B 63 33 65 39 37 61 66 33 2D 35 33 35 32 2D 34 62 30 61 2D 38 39 34 32 2D 33 35 39 63 64 66 30 39 37 63 64 35 7D: Media resource ID 03 00 00 00: Program index CC 55 CC 55 00 00 01 01 1C 07 69 00 59 01 65 00 01 00 D6 FE FF FF 29 05 00 00 80 07 00 00 38 04 00 00 00 00 FF FF BA 78 A8 19 D6 99 5B 62 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 7B 63 33 65 39 37 61 66 33 2D 35 33 35 32 2D 34 62 30 61 2D 38 39 34 32 2D 33 35 39 63 64 66 30 39 37 63 64 35 7D 03 00 00 00				
Responder	**Playback Software**		**Response Method**	**UDP/TCP/Serial Port**	
Response TLV	Name		Length	Default Value	Description

	Tag		2	46	
	Length		2		
	Value[]	Bsucceed	1		The execution result 1: success 0: failure
		Create	2		Initial media resource flag (1=initialize, 0=replace)
		LayerIndex	2		Layer index
Example	CC 55 CC 55 01 00 00 01 F6 04 08 00 2E 00 04 00 01 01 01 00				