Content

1. Range

This standard specifies the protocol basis and communication protocol between the vehicle video terminal and the video platform, the code stream communication between the audio and video stream server and the client player software, and the communication protocol basis between the video platforms in the satellite positioning system of the road transportation vehicle. Communication protocol process, constant definition and protocol data body format.

This standard applies to the transmission of audio and video data between the on-board video terminal of the satellite positioning system of the road transport vehicle and the enterprise video monitoring platform, as well as the exchange and sharing of audio and video resources between different video platforms.

2. Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

JT/ T 808—2011 Terminal Communication Protocol and Data Format of Satellite Positioning System for Road Transport Vehicles

JT/ T 809—2011 Data Exchange of Satellite Positioning System Platform for Road Transport Vehicles

JT/T 1076—2016 Technical requirements for on-board video terminals of satellite positioning systems for road transport vehicles

JT/ T 415—2006 Cataloging and coding rules for road transport e-government platform

IETF RFC 3550 RTP (Real-time Transport Protocol)

IETF RFC 2854 (The Text/Html Media Type)

3. Terms, definitions and abbreviations

3.1 Terms, definitions

The following terms and definitions apply to this document.

3. 1. 1 Code rate

The number of data bits transmitted per unit time during data transmission, the common unit is kilobits per second (kbps).

3. 1. 2 Frame rate

Indicates the number of times that the graphics processor can update the field per second, and is used to

measure the number of displayed frames. The measurement unit is the number of displayed frames per second (Frame per Second, FPS).

3.2 Abbreviations

The following abbreviations apply to this document.

AAC: (Advanced Audio Coding)

MPEG: (Moving Pictures Experts Group)

RTP: (Real-time Transport Protocol)

TCP: (Transmission Control Protocol)

UDP: (User Datagram Protocol)

URL: (Uniform Resource Locator)

UTF-8: (8-bit Unicode Transformation Format)

FTP: (File Transfer Protocol)

4. Protocol basis between video terminal and video platform

4.1 Basic Agreement

The communication method, data type, transmission rules and message composition of the protocol are in accordance with the requirements of Chapter 4 in JT/T 808-2011.

The communication connection mode of signaling data messages in the protocol is in accordance with the requirements of Chapter 5 in JT/T 808-2011.

The message processing mechanism of signaling data packets in the protocol is in accordance with the requirements of Chapter 6 in JT/T 808-2011.

The encryption mechanism of signaling data messages in the protocol is in accordance with the requirements of Chapter 7 in JT/T 808-2011.

In the agreement, the communication parties between the platform and the terminal shall meet the following requirements：

-----All messages shall be answered unless expressly agreed；

-----If the dedicated reply message is not specified, the general reply should be used；

-----For sub-packaged messages, the responder shall respond to each sub-package message on a per-package basis。

4. 2 Real-time audio and video transmission channel convention

One channel of real-time audio and video transmission can transmit one channel of video information or one channel of audio information, as well as one channel of video information and one channel of audio information. There are two types of real-time audio and video transmission channel conventions:

In TCP mode, each TCP connection can carry multiple audio and video channels. If there is no data transmission within the set timeout period, both the terminal and the monitoring center can actively close the TCP connection for audio and video data transmission.

When using UDP, each UDP port can carry multiple audio and video channels.

4.3 Classification of audio and video communication packets

Audio and video data packets are divided into the following two categories：

Signaling data message: The data format shall comply with the provisions of JT/T 808 2011, and new protocol commands and data formats shall be added on the basis of its protocol format. Message communication should use the established link between the vehicle video terminal and the enterprise video surveillance platform for transmitting positioning information, and no new link should be created.

Stream data message: used for network real-time audio and video transmission, network video playback, voice dialogue, voice monitoring, voice broadcast, etc. Message communication should create a new link instead of using a link that transmits positioning information.

5. Communication Protocol Between Video Terminal and Video Platform

5.1 Protocol Instruction Set

See Appendix A for the command message comparison table between the video terminal and the video platform.

5. 2 Inheritance Command Set

Inherit the use of other instructions in JT/T 808-2011 except that the message ID is 0x8804 (recording start command). In addition, in JT/T 808-2011, there are five items in total: 0x0800 (multimedia event message upload), 0x0801 (multimedia data upload), 0x8802 (stored multimedia data retrieval), 0x0802 (stored multimedia data retrieval response), 0x8803 (stored multimedia data upload) The multimedia type field in the instruction shall only contain the picture type in this standard, and the data of the audio and video type shall be transmitted according to the requirements of 5.4 and 5.5.

5. 3 Parameter Setting Instructions

5. 3. 1 Terminal audio and video parameter settings

The terminal audio and video parameter setting message adopts the 0x8103 message defined in 8.8 of JT/T 808-2011, and adds the following audio and video parameter settings, see Table 1.

Table1 Audio and video settings parameter table

Parameter ID	Data Type	Description& Request
0x0075		Audio and video parameter settings, see Table 2 for description
0x0076		Audio and video channel list settings, see Table 3 for description
0x0077		Individual video channel parameter settings, see Table 5 for description
0x0079		Special alarm recording parameter settings, see Table 7 for description
0x007A	DWORD	Video related alarm mask word, and the video report in Table 13 The alarm flag bit is defined correspondingly, if the corresponding bit is 1, the corresponding type of alarm is masked
0x007B		Image analysis alarm parameter settings, see Table 8 for description
0x007C		Terminal sleep and wake-up mode settings, see Table 9 for description

Table 2 Definition and description of audio and video parameters

Start Byte	Field	Type of Data	Description
0	Live Streaming Encoding Mode	BYTE	0：CBR； 1：VBR； 2：ABR； 100 ~ 127：customize

1	Live Streaming Resolution	BYTE	0：QCIF； 1：CIF； 2：WCIF； 3：D1； 4：WD1； 5：720P； 6：1 080P； 100 ～ 127：customize
2	Live Streaming Keyframe Interval	WORD	Range (1 ～ 1 000) frame
4	Live Streaming Target Frame Rate	BYTE	Range(1 ～ 120) Frame/ s
5	Live Streaming Target Bit Rate	DWORD	in kilobits per second(kbps)
9	Store stream encoding mode	BYTE	0：CBR； 1：VBR； 2：ABR； 100 ~ 127：customize
10	Save Stream Resolution	BYTE	0：QCIF； 1：CIF； 2：WCIF； 3：D1； 4：WD1； 5：720P； 6：1 080P； 100 ~ 127：custom
11	Store stream keyframe interval	WORD	Range(1 ～ 1 000) Frame
13	Store stream target frame rate	BYTE	Range(1 ～ 120) Frame/ s
14	Store stream target bit rate	DWORD	In kilobits per second(kbps)

18	OSD Subtitle overlay settings	WORD	Bit wise setting: 0 means no overlay, 1 means overlay； bit0：Date & time； bit1：License plate number； bit2：logical channel number； bit3：latitude and longitude； bit4：driving record speed； bit5：satellite positioning speed； bit6：Continuous driving time； bit7 ~ bit10：reserve； bit11 ~ bit15：Customize
20	Whether to enable audio output	BYTE	0：Not enable；1：enabled

Table 3 Audio and video channel list

Start Byte	Field	Type of Data	Description
0	Total number of audio and video channels	BYTE	denoted by l
1	Total number of audio channels	BYTE	denoted by M
2	Total number of video channels	BYTE	denoted by N
3	Total number of audio channels	[4 × BYTE+ n)] (l + m	See table 4

Table 4 Audio and video channel comparison table

Start Byte	Field	Type of Data	Description
0	physical channel number	BYTE	from 1
1	logical channel number	BYTE	According to Table 2 in JT/T 1076-2016
2	Channel Type	BYTE	0：Audio and video； 1：Audio； 2：Video
3	Whether to connect the Cloud Server	BYTE	This field is valid when the channel type is 0 and 2; 0: not connected; 1: connected

Table 5 Definition and description of individual channel video parameters

Start Byte	Field	Type of Data	Description
0	The number of channels for which video parameters need to be set individually	BYTE	denoted by n
1	List of individual channel video parameter settings	BYTE[21 × n]	See table 6

Table 6 Individual channel video parameter settings

Start Byte	Field	Type of Data	Description
0	logical channel number	BYTE	按照 JT / T 1076—2016 中的表 2
1	Live Streaming Encoding Mode	BYTE	0：CBR； 1：VBR； 2：ABR； 100 ~ 127：Customize
2	Live Streaming Resolution	BYTE	0：QCIF； 1：CIF； 2：WCIF； 3：D1； 4：WD1； 5：720P； 6：1 080P； 100 ~ 127：Customize
3	Live Streaming Keyframe Interval	WORD	Range(1 ～ 1 000) Frame
5	Live Streaming Target Frame Rate	BYTE	Range(1 ～ 120) Frame/ s
6	Live Streaming Target Bit Rate	DWORD	in kilobits per second(kbps)
10	Store stream encoding mode	BYTE	0：CBR； 1：VBR； 2：ABR； 100 ~ 127：Customize

11	Save Stream Resolution	BYTE	0：QCIF； 1：CIF； 2：WCIF； 3：D1； 4：WD1； 5：720P； 6：1 080P； 100 ~ 127：Customize
12	Store stream keyframe interval	WORD	Range(1 ～ 1 000) Frame
14	Store stream target frame rate	BYTE	Range (1 ～ 120) Frame/ s
15	Store stream target bit rate	DWORD	in kilobits per second(kbps)
19	OSD Subtitle overlay settings	WORD	Bitwise setting: 0 means no overlay, 1 means overlay； bit0：Date & time； bit1：License plate number； bit2：logical channel number； bit3：latitude and longitude； bit4：driving record speed； bit5：satellite positioning speed； bit6：Continuous driving time； bit7 ~ bit10：reserve； bit11 ～ bit15：Customize

Table 7 Definition and description of special alarm recording parameters

Start Byte	Field	Type of Data	Description
0	Special alarm recording storage threshold	BYTE	The percentage of the storage threshold of the main memory occupied by special alarm recordings, ranging from 1 to 99, the default value is 20
1	Special alarm recording continue threshold	BYTE	The maximum duration of special alarm recording, the unit is minutes (min), the default value is 5

2	Special alarm identification start time	BYTE	The recording time marked before the special alarm occurs, the unit is minutes (min), the default value is 1

Table 8 Definition and description of video analysis alarm parameters

Start Byte	Field	Type of Data	Description
0	Vehicle occupancy	BYTE	The number of passengers in the passenger vehicle is approved, and an alarm is generated when the video analysis result exceeds the number
1	Fatigue level threshold	BYTE	Video analysis of fatigue driving alarm threshold, when it exceeds the alarm threshold, an alarm will be generated

Table9 Terminal sleep wake-up mode setting data format

Start Byte	Field	Type of Data	Description
0	Sleep wake mode	BYTE	Bitwise setting: 0 means not set, 1 means set; bit0: conditional wake-up; bit1: timed wake-up; bit2: manual wake-up
1	Wake Condition Type	BYTE	This field is valid when bit 0 is 1 in sleep wake-up mode, otherwise it is set to 0; Bit-wise setting: 0 means not set, 1 means set; bit0: emergency alarm; bit1: Collision rollover alarm; bit2: Vehicle door open

2	Timed wake-up day setting	BYTE	Bitwise setting: 0 means not set, 1 means set; bit0: Monday; bit1: Tuesday; bit2: Wednesday; bit3: Thursday; bit4: Friday; bit5: Saturday; bit6: Sunday
3	List of daily wake-up parameters	BYTE[17]	See Table 10, the time periods should not overlap

Table 10 Day wakeup parameter definition

Start Byte	Field	Type of Data	Description
0	Timed wake-up enable flag	BYTE	BYTE bit-wise setting: 0 means not set, 1 means set; bit0: time period 1 wake-up time enable; bit1: time period 2 wake-up time enable; bit2: time period 3 wake-up time enable; bit3: time period 4 wake-up time enable
1	Timed wake-up enable flag	BCD[2]	HHMM，Value range 00：00 ~ 23：59
3	Time period 1 closing time	BCD[2]	HHMM，Value range 00：00 ~ 23：59
5	Time period 1 wake-up time	BCD[2]	HHMM，Value range 00：00 ~ 23：59
7	Time period 2 closing time	BCD[2]	HHMM，Value range 00：00 ~ 23：59
9	Time period 3 wake-up time	BCD[2]	HHMM，Value range 00：00 ~ 23：59
11	Time period 3 closing time	BCD[2]	HHMM，Value range 00：00 ~ 23：59
13	Time period 4 wake-up time	BCD[2]	HHMM，Value range 00：00 ~ 23：59
15	Time period 4 closing time	BCD[2]	HHMM，Value range 00：00 ~ 23：59

5. 3. 2 Query terminal audio and video attributes

Message ID：0x9003。

message body is empty

5. 3. 3 Terminal upload audio and video attributes

Message ID：0x1003.

Packet Type: Signaling Data Packet.

Use the terminal to upload the audio and video attribute command to respond to the terminal audio and video attribute query message issued by the platform. The data format of the message body is shown in Table 11.

Table 11 Format of the audio and video attribute data uploaded by the terminal

Start Byte	Field	Type of Data	Description
0	Input audio codec	BYTE	See table 12
1	Number of input audio channels	BYTE	
2	Input audio sample rate	BYTE	0：8 kHz； 1：22.05 kHz； 2：44.1 kHz； 3：48 kHz
3	Input audio sample bits	BYTE	0：8 位； 1：16 位； 2：32 位
4	Audio frame length	WORD	Range 1 ～ 4 294 967 295
6	Whether to support audio output	BYTE	0：Not allowed；1：Allowed
7	Video encoding method	BYTE	See Table 19
8	The maximum number of audio physical channels supported by the terminal	BYTE	
9	The maximum number of video physical channels supported by the terminal	BYTE	

Table12 Audio and video coding type definition table

Code	Name	Remark
0	Reserved	
1	G. 721	Audio
2	G. 722	Audio
3	G. 723	Audio
4	G. 728	Audio
5	G. 729	Audio
6	G. 711A	Audio
7	G. 711U	Audio
8	G. 726	Audio
9	G. 729A	Audio
10	DVI4 3	Audio
11	DVI4 4	Audio
12	DVI4 8K	Audio
13	DVI4 16K	Audio
14	LPC	Audio
15	S16BE STEREO	Audio
16	S16BE MONO	Audio
17	MPEGAUDIO	Audio
18	LPCM	Audio
19	AAC	Audio
20	WMA9STD	Audio
21	HEAAC	Audio
22	PCM VOICE	Audio
23	PCM AUDIO	Audio
24	AACLC	Audio
25	MP3	Audio
26	ADPCMA	Audio
27	MP4AUDIO	Audio
28	AMR	Audio
29 ～ 90	Reserved	
91	Penetrate	System

92 ～ 97	Reserve	Video
98	H. 264	Video
99	H. 265	Video
100	AVS	Video
101	SVAC	Video
102 ～ 110		Reserved
111 ～ 127		Customize

5. 4 Video alarm instructions

5. 4. 1 Video alarm upload

The video alarm report is reported at the same time as the location information. As the additional information of the 0x0200 location information report, the additional information definition table in Table 20 of JT/T 808-2011 is extended. The extension definition of additional information is shown in Table 13.

Table13 Additional Information Definition Table Extension

Add Message ID	Add Message Length	Description and Request
0x14	4	Video related alarm, DWORD, set by bit, see Table 14 for the definition of flag bit.
0x15	4	1 Video signal loss alarm status, DWORD, set by bit, bit0~bit31 represent the 1~ 32 logical channels, the corresponding bit is 1, it means that the video signal loss occurs in this logical channel.
0x16	4	1 Video signal blocking alarm status, DWORD, set by bit, bit0 ~ bit31 respectively represent the 1 ~ 32 logic channels, the corresponding bit is 1, it means that the logic channel is blocked by video signal.
0x17	2	Memory failure alarm status, WORD, set by bit, bit0~bit11 respectively represent the 1st~12th main memory, bit12~bit15 respectively represent the 1st~4th disaster recovery storage device, the corresponding bit 1 indicates that the memory has failed
0x18	2	Detailed description of abnormal driving behavior alarm, WORD, see Table 15 for definition

Table 14 Video alarm flag definition

Bit	Definition	Processing Description
0	Video signal loss alarm	The flag is maintained until the alarm condition is released
1	Video signal blocking alarm	The flag is maintained until the alarm condition is released
2	Storage unit failure alarm	The flag is maintained until the alarm condition is released
3	Other video equipment failure alarm	The flag is maintained until the alarm condition is released
4	Bus overload alarm	The flag is maintained until the alarm condition is released
5	Abnormal driving behavior alarm	The flag is maintained until the alarm condition is released
6	Special alarm recording reaches the storage threshold alarm	Cleared after receiving response
7 ～ 31	reserved	

Table 15 Abnormal driving behavior flag definition

Start Byte	Field	Type of Data	Description & Request
0	Types of Abnormal Driving Behaviors	WORD	Bitwise setting: 0 means no, 1 means yes; bit0: fatigue; bit1: make a call; bit2: smoke; bit3 to bit10: reserved; bit11 to bit15: custom
2	Degree of fatigue	BYTE	The fatigue level is represented by 0 to 100, the larger the value is Indicates more fatigue

5. 4. 2 Terminal upload passenger traffic

Message ID：0x1005

Packet Type: Signaling Data Packet.

The terminal device counts the passengers getting on and off the bus through video analysis, and sends the counting results to the platform. The data format of the message body is shown in Table 16

Table16 Terminal upload passenger flow data format

Start Byte	Field	Type of Data	Description & Request
0	Start time	BCD[6]	YY-MM-DD-HH-MM-SS(GMT+8 time, this The time involved in the standard uses this time zone)
6	Ending time	BCD[6]	YY-MM-DD-HH-MM-SS
12	Number of boarding people	WORD	Number of people getting on board from start time to end time
14	Number of people getting off	WORD	Number of people getting off from the start time to the end time

5. 5 Real-time audio and video transmission instructions

5. 5. 1 Real-time audio and video transmission request

Message ID：0x9101。

Packet Type: Signaling Data Packet.

The platform requests real-time audio and video transmission from terminal equipment, including real-time video transmission, active two-way voice intercom, one-way monitoring, broadcast voice to all terminals, and specific transparent transmission. The format of the message body data is shown in Table 17. After receiving this message, the terminal will reply to the video terminal general response, and then establish a transmission link through the corresponding server IP address and port number, and then transmit the corresponding audio and video stream data according to the audio and video stream transmission protocol.

Table 17 Real-time audio and video transmission request data format

Start Byte	Field	Type of Data	Description & Request
0	Server IP address length	BYTE	Length *n*
1	Server IP Address	STRING	Live Video Server IP Address
1 + *n*	Server video channel listening port number(TCP)	WORD	Live Video Server TCP Port Number

3 + n	Server video channel listening port number(UDP)	WORD	Live Video Server UDP Port Number
5 + n	logical channel number	BYTE	Refer to Table 2 in JT/T 1076-2016
6 + n	Data Type	BYTE	0: Audio and video, 1: Video, 2: Two-way intercom, 3: Monitor, 4: Central broadcast, 5: Transparent transmission
7 + n	Stream type	BYTE	0: Main stream, 1: Sub stream

After receiving the special alarm from the video terminal, the platform should take the initiative to issue this command without waiting for manual confirmation, and start real-time audio and video transmission.

5. 5. 2 Audio and video real-time transmission control

Message ID：0x9102

Packet Type: Signaling Data Packet.

The platform sends audio and video real-time transmission control commands to switch code streams, pause code stream transmission, close audio and video transmission channels, etc. The data format of the message body is shown in Table 18.

Table 18 Audio and video real-time transmission control data format

Start Byte	Field	Type of Data	Description & Request
0	logical channel number	BYTE	Refer to Table 2 in JT/T 1076-2016

1	Control Command	BYTE	The platform can control the real-time audio and video of the device through this command: 0: Turn off the audio and video transmission command; 1: switch stream (increase pause and resume); 2: Pause the sending of all streams on this channel; 3: Resume the transmission of the stream before the suspension, which is consistent with the stream type before the suspension; 4: Turn off the two-way intercom
2	Turn off audio and video types	BYTE	0: close the audio and video data related to this channel; 1: Only the audio related to the channel is turned off, and the video related to the channel is reserved; 2: Only close the video related to this channel, keep the audio related to this channel
3	Switch stream type	BYTE	Switch the previously applied code stream to the newly applied code stream, and the audio is the same as before the switch. The newly applied code stream is: 0: main code stream; 1: Substream

5. 5. 3 Real-time audio and video streaming and transparent data transmission

Packet type: Stream data packet.

The transmission of real-time audio and video stream data refers to the RTP protocol, which is carried by UDP or TCP. Payload packet format in IETF RFC 3550 RTP

On the basis of the definition, fields such as message serial number, SIM card number, audio and video channel number are supplemented, and the definition of the payload packet format is shown in Table 19. The bits defined in the table are filled in according to big-endian mode (big-endian).

Table 19 Audio and video streaming and transparent data transmission protocol payload format definition table

Start Byte	Field	Type of Data	Description & Request
0	Frame header identifier	DWORD	Fixed at 0x30 0x31 0x63 0x64
4	V	2 BITS	Fixed at 2
	P	1 BIT	Fixed at 0
	X	1 BIT	Whether the RTP header needs an extension bit, fixed at 0
	CC	4 BITS	Fixed at 1
5	M	1 BIT	Flag bit to determine whether it is the boundary of a complete data frame
	PT	7 BITS	Load type, see Table 19
6	Package Serial Number	WORD	Initially 0, add 1 to the sequence number for each RTP packet sent
8	SIM No.	BCD[6]	Terminal SIM No.
14	Logical channel number	BYTE	Refer to Table 2 of JT / T 1076—2016
15	Data Type	4 BITS	0000：Video I Frame； 0001：Video P Frame； 0010：Video B Frame； 0011：Audio Frame； 0100：Transparent data transmission
	Subcontract processing markers	4 BITS	0000：Atomic package, not splittable ； 0001：The first packet when subcontracting is processed； 0010：The last packet during sub-packet processing； 0011：Intermediate package when subcontracting
16	timestamp	BYTE[8]	Identifies the relative time of the current frame of this RTP packet, in milliseconds (ms). When the data type is 0100, there is no such field
24	Last I Frame Interval	WORD	The time interval between this frame and the previous key frame, in milliseconds (ms), when the data type is non-video frame, there is no such field
26	Last Frame Interval	WORD	(The time interval between this frame and the previous frame, in milliseconds ms), when the data type is non-video frame, there is no such field
28	data body length	WORD	Subsequent data body length, excluding this field

30	data body	BYTE[n]	Audio and video data or transparent data, the length does not exceed 95 byte

5. 5. 4 Real-time audio and video transmission status notification

Message ID：0x9105。

Packet type: Signaling data packet.

The platform sends notification packets to the terminal according to the set time interval in the process of receiving the audio and video data uploaded by the terminal. The format of the message body data is shown in Table 20.

Table 20 Real-time audio and video transmission status notification data format

Start Byte	Field	Type of Data	Description & Request
0	Logical channel number	BYTE	Refer to Table 2 of JT / T 1076—2016
1	Packet loss rate	BYTE	The packet loss rate of the current transmission channel, multiply the value by 100 and take the integer part

5. 6 Historical audio and video query, playback and download instructions

5. 6. 1 Query resource list

Message ID：0x9205

Packet type: Signaling data packet.

The platform queries the video file list from the terminal according to the combined conditions of audio and video type, channel number, alarm type and start and end time. The format of the message body data is shown in Table 21.

Table 21 Query the data format of the video file list

Start Byte	Field	Type of Data	Description & Request
0	Logical channel number	BYTE	Refer to table 2 of JT / T 1076—2016，0 means all channel.
1	Start time	BCD[6]	YY-MM-DD-HH-MM-SS， All 0 means no start time condition
7	Ending Time	BCD[6]	YY-MM-DD-HH-MM-SS， All 0 means no end time condition
13	Alarm logo	64BITS	bit0 ~ bit31 refer to the definition of alarm logo of Table 18 of JT / T 808—2011； bit32 ~ bit63 见表 13； All 0 means no alarm condition

21	Audio and video resource types	BYTE	0： Audio & Video， 1： Audio， 2： Video， 3： Video or Audio;
22	Stream type	BYTE	0：All stream code，1：Main Code Stream，2：Subcode stream
23	memory type	BYTE	0：All Storage，1：Main storage， 2：disaster recovery storage

5. 6. 2 List of audio and video resources uploaded by the terminal

Message ID：0x1205。

Packet type: Signaling data packet.

The terminal responds to the platform's instruction for querying the audio and video resource list, and responds with the terminal uploading the audio and video resource list message. If the list is too large and needs to be subcontracted for transmission, the subcontracting mechanism defined in 4.4.3 in JT/T 808-2011 shall be used for processing, and the platform shall reply to each individual subcontracting video platform general response. The format of the message body data is shown in Table 22.

Table 22 The data format of the list of audio and video resources uploaded by the terminal

Start Byte	Field	Type of Data	Description & Request
0	Serial No.	WORD	The serial number corresponding to the command to query the audio and video resource list
2	Total number of audio and video resources	DWORD	No audio and video resources that meet the conditions, set to 0
6	Audio and video resource list		Refer to table 23

Table 23 Format of the list of audio and video resources uploaded by the terminal

Start Byte	Field	Type of Data	Description & Request
0	Logical channel number	BYTE	Refer to table 2 of JT / T 1076—2016
1	Start time	BCD[6]	YY-MM-DD-HH-MM-SS
7	Ending Time	BCD[6]	YY-MM-DD-HH-MM-SS
13	Alarm logo	64BITS	bit0 ~ bit31 refer to thedefinition of alarm logo JT / T 808—2011 ; bit32 ~ bit63 see table 13
21	Audio and video resource types	BYTE	0：Audio & Video，1：Audio，2：Viddeo
22	Stream type	BYTE	1：Main Code stream，2：Subcode stream
23	Memory type	BYTE	1：main storage，2：disaster recovery storage
24	File size	DWORD	unit(BYTE)

5. 6. 3 The platform issues a remote video playback request

Message ID：0x9201。

Packet type: Signaling data packet.

The platform requests audio and video video playback from the terminal device, the terminal should respond with the 0x1205 (terminal upload video file list) command, and then transmit the video data in the packet format defined in Table 18 Real-time audio and video stream data transmission RTP protocol payload format. The message body data format is shown in Table 24.

Table 24 The data format of the remote video playback request issued by the platform

Start Byte	Field	Type of Data	Description & Request
0	Server IP Length	BYTE	Length n
1	Server IP address	STRING	IP address of real-time audio and video server
1 + n	Server audio and video channel listening port number(TCP)	WORD	Real-time audio and video server port number, set to 0 when not using TCP transmission
3 + n	Server audio and video channel listening port number (UDP)	WORD	Real-time audio and video server port number, set to 0 when not using UDP transmission
5 + n	Logical channel number	BYTE	Refer to table of JT / T 1076—2016
6 + n	Audio and video type	BYTE	0： Audio & Video， 1： Audio， 2： Video， 3： Audio or Video
7 + n	Code Stream Type	BYTE	0：Main code stream or subcode stream，1：Main code stream，2：subcode stream； If this channel only transmits audio, this field is set to 0
8 + n	memory type	BYTE	0: Main memory or disaster recovery memory, 1: Main memory, 2: Disaster recovery storage
9 + n	Playback method	BYTE	0: normal playback; 1: Fast forward playback; 2: Rewind the key frame quickly; 3: key frame playback; 4: Single frame upload

10 + n	Fast forward or rewind multiples	BYTE	When the playback mode is 1 and 2, the content of this field is valid, otherwise it is set to 0. 0: invalid; 1: 1 times; 2: 2 times
10 + n	Fast forward or rewind multiples	BYTE	3：4 times； 4：8 times； 5：16 times
11 + n	Start Time	BCD[6]	YY-MM-DD-HH-MM-SS，When the playback mode is 4, this field indicates the upload time of a single frame
17 + n	Ending time	BCD[6]	YY-MM-DD-HH-MM-SS， 0 means always return When the playback mode is 4, this field is invalid

5. 6. 4 Remote video playback control issued by the platform

Message ID：0x9202。

Packet type: Signaling data packet.

During the playback of audio and video recordings by the terminal device, the platform can issue playback control instructions to control the playback process. The format of the message body data is shown in Table 25.

Table 25 Remote video playback control data format issued by the platform

Start Byte	Field	Type of Data	Description & Request
0	Audio and video channel number	BYTE	Refer to table 2 of JT / T 1076—2016
1	playback control	BYTE	0: start playback; 1: Pause playback; 2: End playback; 3: Fast forward playback; 4: Rewind the key frame quickly; 5: Drag playback; 6: Keyframe playback

2	Fast forward or rewind multiples	BYTE	When the playback control is 3 and 4, the content of this field is valid, otherwise it is set to 0. 0：Invalid； 1：1 times； 2：2 times； 3：4 times； 4：8 times； 5：16 times
3	Drag playback position	BCD[6]	YY-MM-DD-HH-MM-SS，This field is valid when playback control is 5

5. 6. 5 File upload instruction

Message ID：0x9206。

Packet type: Signaling data packet.

The platform issues a file upload command to the terminal, and the terminal replies with a general response and uploads the file to the specified path of the target FTP server through FTP. The message body data format is shown in Table 26.

Table 26 File upload instruction data format

Start Byte	Field	Type of Data	Description & Request
0	Server IP address length	BYTE	Length *k*
1	Server IP address	STRING	FTP Server IP address
1 + *k*	Port	WORD	FTP Server Port
3 + *k*	Username length	BYTE	Length *l*
4 + *k*	Username	STRING	FTP Username
4 + *k* + *l*	Password length	BYTE	Length *m*
5 + *k* + *l*	Password	STRING	FTP Password
5 + *k* + *l* + *m*	File upload path length	BYTE	Length *n*
6 + *k* + *l* + *m*	File upload path	STRING	File upload path
6 + *k* + *l* + *m* + *n*	Logical Channel No.	BYTE	Refer to table 2 of JT / T 1076—2016
7 + *k* + *l* + *m* + *n*	Start time	BCD[6]	YY-MM-DD-HH-MM-SS
13 + *k* + *l* + *m* + *n*	Ending Time	BCD[6]	YY-MM-DD-HH-MM-SS

19 + *k* + *l* + *m* + *n*	Alarm logo	64BITS	Refer to the definition of the alarm logo of bit0 ～ bit31 JT / T 808—2011 ; bit32 ~ bit63 refer to table 12 ; All 0 means do not specify whether there is an alarm
27 + *k* + *l* + *m* + *n*	Audio and video resource types	BYTE	0 : Audio & Video , 1 : Audio , 2 : Video , 3 : Audio or Audio & Video
28 + *k* + *l* + *m* + *n*	Stream type	BYTE	0: Main code stream or Subcode stream 1 : Main Code stream , 2 : Subcode stream
29 + *k* + *l* + *m* + *n*	Storage type	BYTE	0: Main Storage or disaster recovery storage; 1 : main storage , 2 : disaster recovery storage
30 + *k* + *l* + *m* + *n*	Task Execution Conditions	BYTE	Represented in bits: bit0: WIFI, when it is 1, it can be downloaded under WI-FI; bit1: LAN, when it is 1, it can be downloaded when connected to LAN; bit2: 3G / 4G, when it is 1, it can be downloaded when connected with 3G / 4G download

5. 6. 6 File upload completion notification

Message ID : 0x1206 .

Packet type: Signaling data packet.

When all files are uploaded through FTP, the terminal will report this command to notify the platform. The message body data format is shown in Table 27.

Table 27 File upload completion notification data format

Start Byte	Field	Type of Data	Description & Request
0	Reply serial number	WORD	The serial number corresponding to the platform file upload message
2	Result	BYTE	0 : Success ; 1 : Failed

5. 6. 7 File upload control

Message ID：0x9207。

Packet type: Signaling data packet.

The platform notifies the terminal to pause, resume or cancel all files in transit. The message body data format is shown in Table 28.

Table 28 File upload control data format

Start Byte	Field	Type of Data	Description & Request
0	Reply serial number	WORD	The serial number corresponding to the platform file upload message
2	upload control	BYTE	0: Pause; 1: Continue; 2: Cancel

5. 7 PTZ Control Instructions

5. 7. 1 PTZ rotation

Message ID: 0x9301

Packet type: Signaling data packet.

The platform requests the terminal to rotate the lens, message body data format is shown in Table 29.

Table 29 PTZ rotation data format

Start Byte	Field	Type of Data	Description & Request
0	Logical Channel Number	BYTE	Refer to table 2 of JT / T 1076—2016
1	Direction	BYTE	0: stop; 1: up; 2: down; 3: left; 4: Right
2	Speed	BYTE	0 ～ 255

5. 7. 2 PTZ adjustment focus control

Message ID：0x9302。

Packet type: Signaling data packet.

The platform requests the terminal to adjust the focal length of the lens. The message body data format is shown in Table 30.

Table 30 PTZ adjustment lens focus control data format

Start Byte	Field	Type of Data	Description & Request
0	Logical Channel Number	BYTE	Refer to table 2 of JT / T 1076—2016
1	Focus adjustment direction	BYTE	0: increase the focal length; 1: The focal length is reduced

5. 7. 3 Gimbal Adjustment Aperture Control

Message ID: 0x9303;

Packet type: Signaling data packet.

The platform requests the terminal to adjust the lens aperture. The message body data format is shown in Table 31

Table 31 PTZ adjustment lens aperture control data format

Start Byte	Field	Type of Data	Description & Request
0	Logical Channel Number	BYTE	Refer to table 2 of JT / T 1076—2016
1	Aperture adjustment method	BYTE	0: Increase; 1: Turn down

5. 7. 4 PTZ wiper control

Message ID: 0x9304;

Packet type: Signaling data packet.

The platform requests wipers from the terminal. The message body data format is shown in Table 32.

Table 32 PTZ wiper control data format

Start Byte	Field	Type of Data	Description & Request
0	Logical Channel Number	BYTE	Refer to table 2 of JT / T 1076—2016
1	Start-stop sign	BYTE	0: stop; 1: start

5. 7. 5 Infrared fill light control

Message ID: 0x9305

Packet type: Signaling data packet.

The platform requests infrared supplementary light control from the terminal. The message body data format is shown in Table 33.

Table 33 Infrared fill light control data format

Start Byte	Field	Type of Data	Description & Request
0	Logical Channel Number	BYTE	Refer to table 2 of JT / T 1076—2016
1	Start-stop sign	BYTE	0: stop; 1: start

5. 7. 6 PTZ zoom control

Message ID: 0x9306;

Packet type: Signaling data packet.

The platform requests zoom control from the terminal. The message body data format is shown in Table 34.

Table 34 PTZ zoom control data format

Start Byte	Field	Type of Data	Description & Request
0	Logical Channel Number	BYTE	Refer to table 2 of JT / T 1076—2016
1	Zoom control	BYTE	0: Increase; 1: Turn down

5.8 Terminal sleep wake-up command

The platform wakes up the dormant terminal to start working by sending a wake-up message. The content of the message is "WAKEUPXX", where XX represents the duration of wake-up, in minutes (min), and the value ranges from 0 to 65 536. If 0, it means stay awake until terminal ACC ON or below rated voltage.

6. Stream communication between audio and video streaming server and client-side playback software

6.1 Audio and video stream and transparent data encapsulation format

See Table 18 for the definition of audio and video streams and transparent data encapsulation formats between the video platform and the client-side playback software.

6. 2 Audio and video streaming request URL command format

After the government video surveillance platform sends a real-time preview or remote playback request command to the enterprise video surveillance platform and gets a successful response,

Get the IP address and port number of the audio and video streaming server, and send it directly to the enterprise audio and video streaming server from the client of the government video supervision platform URL command to obtain audio and video stream data after establishing a link, and the client can play it through a browser plug-in or special software.

The audio and video stream request URL should not be displayed in the interface. The specific definition of the instruction format is as follows：

http: // [Server IP Address]: [Port Number] / [License Plate Number]. [License Plate Color]. [Logical Channel Number]. [Audio Video Logo]. [Aging Password]

The definition of each data item of the audio and video stream request URL instruction is shown in Table 35.

Table 35 Audio and video stream request URL instruction data item definition table

Field		Description & Request
Address attribute information	Server IP Address	Audio and video streaming server IP address
	Port	Audio and video streaming service port number
	License plate number	Should be encoded in UTF-8 and uniformly converted to the application/x-www-form-URLencoded MIME format in IETF RFC 2854
	license plate color	Refer to the Regulation of 5.4.12 of JT / T 415—2006
	Logical Channel Number	Refer to table 2 of JT / T 1076—2016, 0 means all channels.
	Audio and video logo	0: audio and video; 1: audio; 2: Video

Additional Information	time-limited password	It is generated by the enterprise platform server, and the time-limited password of the government platform client in the home region is different from that of the cross-domain regional government platform. The aging password should only consist of English letters (including upper and lower case) and Arabic numerals, with a length of 64 ASCII characters, and should be updated every 24h
	location marker	The satellite positioning time and latitude and longitude of the vehicle at any time within 5 minutes are used for verification when accessing the cross-domain regional government platform, and can be empty when the client of the home region government platform accesses. ASCII character representation, the format is： YYYYMMDD - HHMMSS - NXX. XXXXXX - EXXX. XXXXXX

7. Basics of Communication Protocols Between Video Platforms

The communication method, data type, security authentication method and protocol message format between different video platforms are in accordance with the requirements of Chapter 4 in JT/T 809-2011.

Data transmission between different video platforms does not require authentication, and the transmission channel should use the link that has been established between the positioning platforms, and no new link will be added.

8. Communication protocol process between video platforms

8. 1 Time-limited password reporting and request business class

The time-limited password is automatically generated by the enterprise video surveillance platform every day, and is actively uploaded to the local government video supervision platform. The local government video supervision platform will actively upload it to the higher-level government video supervision platform after receiving the day's time-limited password. When the cross-domain government video supervision platform needs to access the audio and video information of the cross-domain vehicle, it should request the cross-domain time-limited password from the higher-level government video supervision platform.

8. 2 Real-time audio and video services

8. 2. 1 The enterprise video surveillance platform uploads real-time audio and video data to the government video surveillance platform.

The government video surveillance platform sends a real-time audio and video upload request to the enterprise video surveillance platform. After the enterprise video surveillance platform receives the request, it should respond to the government video surveillance platform. If the response is successful, the government video surveillance platform will request real-time audio and video data from the video server IP and port specified by the enterprise video surveillance platform.

8. 2. 2 Enterprise video surveillance platforms stop uploading real-time audio and video data to government video surveillance platforms.

The government video surveillance platform sends a request to stop real-time audio and video uploading to the enterprise video surveillance platform. After the enterprise video surveillance platform receives the request, it should respond to the government video surveillance platform. If the answer is successful, the enterprise video surveillance platform stops sending real-time audio and video data to the government video surveillance platform.

8. 3 Remote video retrieval business class

8. 3. 1 The government video monitoring platform obtains the audio and video resource directory from the enterprise video monitoring platform

The government video surveillance platform sends a request for obtaining the audio and video resource directory to the enterprise video surveillance platform. After receiving the request, the enterprise video surveillance platform should immediately retrieve the latest audio and video resource directory from the terminal, update the local directory, and send it to the government video surveillance platform. answer. If the response result is successful, the enterprise video surveillance platform will send the audio and video resource directory data to the government video surveillance platform.

8. 3. 2 The enterprise video surveillance platform actively uploads the audio and video resource directory to the government video surveillance platform

After the enterprise video surveillance platform receives the special alarm information uploaded by the terminal, after waiting for the complete recording of the video information, it should search the terminal for the latest audio and video resource directory with special alarm signs, and update the local directory to the government video surveillance platform. Actively upload audio and video resource directory.

8. 4 Remote video download business

8. 4. 1 The government video surveillance platform downloads video data from the enterprise video surveillance platform

The government video surveillance platform sends a request to obtain video data to the enterprise video surveillance platform. After the enterprise video surveillance platform receives the request, it shall respond to the government video surveillance platform. If the response result is successful, the government video surveillance platform can request recording data from the FTP server IP and port specified by the enterprise video surveillance platform.

8. 4. 2 The enterprise video surveillance platform sends a download completion notification to the government video surveillance platform

The enterprise video surveillance platform sends a download completion notification to the government video surveillance platform. After the government video surveillance platform receives the notification, it means that the video data has been downloaded from the terminal. The government video surveillance platform can send the IP and port of the video FTP server designated by the enterprise video surveillance platform. Request recording data.

8. 4. 3 The government video surveillance platform sends download control instructions to the enterprise video surveillance platform

The government video surveillance platform sends download control instructions to the enterprise video surveillance platform. After the enterprise video surveillance platform receives the instruction, it should respond to the corresponding control actions in a timely manner and respond to the government video surveillance platform。

8. 5 Remote video playback business

8. 5. 1 The government video surveillance platform requests video playback from the enterprise video surveillance platform

The government video surveillance platform sends a video playback request to the enterprise video surveillance platform. After the enterprise video surveillance platform receives the request, it should reply to the government video supervision platform. If the response result is successful, the government video surveillance platform will request historical audio and video stream data from the IP and port of the audio and video streaming server designated by the enterprise video surveillance platform.

8.5.2 Government video surveillance platforms stop requesting video playback from enterprise video surveillance platforms

The government video surveillance platform sends a request to stop the video playback to the enterprise video surveillance platform. After receiving the request, the enterprise video surveillance platform should respond to the government video surveillance platform and stop sending historical

audio and video stream data to the government video surveillance platform.

9. Definition of Communication Protocol Constants Between Video Platforms

9.1 Business data type identifier

See Table 36 for the names and identifiers of service data types specified by the audio and video data exchange protocol.

Table36 Business data type name and identification comparison table

Message Type	business data type name	Message link	Business data type identifier	Value
Time-limited password business class	Main link aging password exchange message	Main link	UP AUTHORIZE MSG	0x1700
	Slave link aging password exchange message	Slave link	DOWN AUTHORIZE MSG	0x9700
Real-time audio and video services	Main link real-time audio and video interactive messages	Main link	UP REALVIDEO MSG	0x1800
	Slave link real-time audio and video interactive messages	Slave link	DOWN REALVIDEO MSG	0x9800
Remote video retrieval	Main link remote recording retrieval interactive message	Main link	UP SEARCH MSG	0x1900
	Slave link remote recording retrieval interactive message	Slave link	DOWN SEARCH MSG	0x9900
Remote video playback	Main link remote video playback interactive message	Main link	UP PLAYBACK MSG	0x1A00
	Slave link remote video playback interactive message	Slave link	DOWN PLAYBACK MSG	0x9A00

Remote video download	Main link remote video download interactive message	Main link	UP DOWNLOAD MSG	0x1B00
	Slave link remote video download interactive message	Slave link	DOWN DOWNLOAD MSG	0x9B00

9. 2 Sub-Business Type Identifier

See Table 37 for the sub-service type names and identifiers specified in the data exchange protocol.

Table 37Sub-business type name and logo comparison table

Business data type	Sub business type name	Sub-business data type identifier	Value
主链路时效口令业务类消 息 UP AUTHORIZE MSG	Aging password report message	UP AUTHORIZE MSG STARTUP	0x1701
	Aging request message	UP AUTHORIZE MSG STARTUP REQ	0x1702
从链路时效口令业务类消 息 DOWN BASE DATA MSG	Aging Password Request Reply Message	DOWN AUTHORIZE MSG STARTUP REQ ACK	0x9702
主链路实时音视频交互消 息 UP REALVIDEO MSG	Real-time audio and video request response message	UP REALVIDEO MSG STARTUP ACK	0x1801
	Actively request to stop real-time audio and video transmission response message	UP REALVIDEO MSG END ACK	0x1802
从链路实时音视频交互消 息	Real-time audio and video requests information	DOWN REALVIDEO MSG STARTUP	0x9801

DOWN REALVIDEO MSG	Actively request to stop real-time audio and video transmission messages	DOWN REALVIDEO MSG END	0x9802
主链路远程录像检索交互消息 UP SEARCH MSG	Actively upload audio and video resource directory information messages	UP FILELIST MSG	0x1901
	Query audio and video resources Reply message	UP REALVIDEO FILELIST REQ ACK	0x1902
从链路远程录像检索交互消息 DOWN SEARCH MSG	Actively upload audio and video resource directory information response message	DOWN FILELIST MSG ACK	0x9901
	Query the audio and video resource directory request message	DOWN REALVIDEO FILELIST REQ	0x9902
主链路远程录像回放交互消息 UP PLAYBACK MSG	Remote video playback request response message	UP PLAYBACK MSG STARTUP ACK	0x1A01
	Remote video playback control response message	UP PLAYBACK MSG CONTROL ACK	0x1A02
从链路远程录像回放交互 消 息 DOWN PLAY-BACK MSG	Remote video playback request message	DOWN PLAYBACK MSG STARTUP	0x9A01
	Remote video playback control message	DOWN PLAYBACK MSG CONTROL	0x9A02

主链路远程录像下载交互消息 UP DOWNLOAD MSG	Remote video download request response message	UP DOWNLOAD MSG STARTUP ACK	0x1B 01
	Remote video download completion notification message	UP DOWNLOAD MSG END INFORM	0x1B 02
	Remote video download control response message	UP DOWNLOAD MSG CONTROL ACK	0x1B 03
从链路远程录像下载交互 消 息 DOWN DOWN-LOAD MSG	Remote video download request message	DOWN DOWNLOAD MSG STARTUP	0x9B 01
	Remote video download complete notification response message	UP DOWNLOAD MSG END INFORM ACK	0x9B 02
	Remote video download control message	DOWN DOWNLOAD MSG CONTROL	0x9B 03

9.3 Video Alarm Type Coding

See Table 38 for video alarm type codes reported through the platform.

Table 38 Vehicle Video Alarm Type Code Table

Code	Name	Description & Request
0x0101	Video signal loss alarm	—
0x0102	Video signal blocking alarm	—
0x0103	Storage unit failure alarm	—
0x0104	Other video equipment failure alarm	—
0x0105	Bus overload alarm	—
0x0106	Abnormal driving behavior alarm	—
0x0107	Special alarm recording reaches the storage threshold alarm	—

10. Communication protocol data body format between video platforms

10.1 Time-limited password reporting and request business class

10. 1. 1 Aging password report message

Link Type: Main link

Message direction: lower platform to upper platform

Sub-Business Type Identifier：UP_AUTHORIZE_MSG_STARTUP。

Description: The enterprise video surveillance platform actively reports the time-limited password to the government video surveillance platform or the lower-level government video surveillance platform to the higher-level government video surveillance platform. See Table 39 for the data body. This command does not need to be answered.

Table 39 Aging password reporting message data body

Field name	Bit No.	Data Type	Description & request
DATA TYPE	2	uint16 t	Sub-Business Type Identifier

PLATEFORM ID	11	BYTES	The unique code of the enterprise video surveillance platform, the administrative division code of the enterprise to which the platform belongs + the platform announcement number
AUTHORIZE CODE 1	64	BYTES	The time-limited password used by the local government platform
AUTHORIZE CODE 2	64	BYTES	Time-limited passwords used by cross-domain regional government platforms

10. 1. 2 Aging Password Request Message

Link Type: Main link

News direction: Cross-regional government video supervision platform to higher-level government video supervision platform

Sub-Business Type Identifier：UP AUTHORIZE MSG STARTUP REQ.

Description: The cross-regional government video surveillance platform obtains the same-day validity password of the video surveillance platform of the enterprise where the designated vehicle is located from the higher-level government video surveillance platform. See Table 40 for the data body.

Table 40 Aging password request message data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent data length, the value is 0x00000000

10. 1. 3 Aging Password Request Reply Message

Link Type: Slave Link

Direction of news: Higher-level government video supervision platform to cross-regional government video supervision platform

Sub-Business Type Identifier：DOWN AUTHORIZE MSG STARTUP REQ ACK .

Description: The superior government video supervision platform responds to the time-limited password

request message sent by the cross-regional government video supervision platform, and the superior government video supervision platform determines the content of the response according to the geographic location of the requesting vehicle within 5 minutes. The data body is shown in Table 41.

Table 41 Aging password request response message data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 2 fields data length

10. 2 Real-time audio and video services

10. 2. 1 Real-time audio and video request messages

Link Type: Slave Link

Message direction: the initiator platform to the receiver platform

Sub-Business Type Identifier：DOWN REALVIDEO MSG STARTUP。

Description: The government video supervision platform issues the order to request the real-time audio and video of the vehicle to the enterprise video surveillance platform, the upper-level government platform to the lower-level government platform, or the cross-domain regional government platform to the home region government platform. The data body is shown in Table 42.

Table 42 Real-time audio and video request data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 4 fields data length
CHANNEL ID	1	BYTE	Logical channel number, according to Table 2 in JT/T 1076—2016, 0 means all channels

AVITEM TYPE	1	BYTE	Audio and video types, defined as follows: 0x00: audio and video; 0x01: audio; 0x02: video
AUTHORIZE CODE	64	BYTES	time-limited password
GNSS DATA	36	BYTES	Any position within 5 minutes after the vehicle enters the cross-domain area, this field is only used for cross-domain access requests, in accordance with the provisions of JT/T 809-2011 protocol 4.5.8.1

10. 2. 2 Real-time audio and video request response message

Link Type: Main Link

Message direction: the receiver platform to the initiator platform

Sub-Business Type Identifier：UP_REALVIDEO_MSG_STARTUP_ACK。

Description: The enterprise video surveillance platform responds to the vehicle real-time audio and video request message sent by the government video surveillance platform. The data body is shown in Table 43.

Table 43 Real-time audio and video response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 3 fields data length
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failed; 0x02: not supported; 0x03: session ended; 0x04: The aging password is incorrect; 0x05: Cross-domain conditions are not met

SERVER IP	32	Octet String	Enterprise Video Server IP Address
SERVER PORT	2	uint16 t	Enterprise Video Server Port Number

10. 2. 3 Actively request to stop real-time audio and video transmission messages

Link Type: Slave Link

News direction: government video supervision platform to enterprise video surveillance platform

Sub-Business Type Identifier：DOWN REALVIDEO MSG END。

Description: The government video monitoring platform issues this order to the enterprise video monitoring platform, and actively requests to stop the real-time audio and video transmission of the vehicle. Data body see Table 44.

Table 44 Actively request to stop real-time audio and video message data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 2 fields data length
CHANNEL ID	1	BYTE	Logical channel number, according to Table 2 in JT/T 1076—2016, 0 means all channels
AVITEM TYPE	1	BYTE	Audio and video types, defined as follows: 0x00: audio and video; 0x01: audio; 0x02: video

10. 2. 4 Actively request to stop real-time audio and video transmission response message

Link Type: Main Link

News direction: enterprise video surveillance platform to government video surveillance platform

Sub-Business Type Identifier：UP REALVIDEO MSG END ACK.

Description: The enterprise video surveillance platform responds to the active request sent by the government video surveillance platform to stop the real-time audio and video transmission message. The data body is shown in Table 45.

Table 45 Actively request to stop real-time audio and video response message data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 1 fields data length
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failed; 0x02: not supported; 0x03: Session ended

10. 3 Remote video retrieval

10. 3. 1 Actively upload audio and video resource directory information messages

Link Type: Main Link

Message direction: lower platform to upper platform

Sub-Business Type Identifier：UP_FILELIST_MSG

Description: The enterprise video surveillance platform actively sends audio and video resource catalogs with special alarm signs to the government video supervision platform, or the lower-level government platform to the upper-level government platform. Data body see Table 46.

Table 46 Actively upload audio and video resource catalog data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 2 fields data length
ITEM NUM	4	uint32 t	Total number of resource catalog items
ITEM LIST			List of resource directory items, see Table 47

Table 47 Upload audio and video resource directory item list format

Field name	Bit No.	Data Type	Description & request
CHANNEL ID	1	BYTE	Logical channel number, according to Table 2 in JT/T 1076—2016, 0 means all channels
START TIME	8	time t	UTC Time
END TIME	8	time t	UTC Time
ALARM TYPE	8	64BITS	Bit0-31 is defined according to JT/T 808—2011 Table 18 alarm flag bit; bit32-63 see Table 10
AVITEM TYPE	1	BYTE	Audio and video types, defined as follows: 0x00: audio and video; 0x01: audio; 0x02: video
STREAM TYPE	1	BYTE	Stream type, defined as follows: 0x01: Main stream; 0x02: Sub stream
MEM TYPE	1	BYTE	Memory type, defined as follows: 0x01: main memory; 0x02: disaster recovery memory
FILE SIZE	4	uint32 t	file size in bytes (BYTE)

10. 3. 2 Actively upload audio and video resource directory response message

Link Type: Slave Link

Message direction: upper platform to lower platform

Sub-Business Type Identifier：DOWN FILELIST MSG ACK。

Description: The government video surveillance platform responds to the request message for the active upload of audio and video resource catalogs sent by the enterprise video surveillance platform. The data body is shown in Table 48.

Table 48 Actively upload the audio and video resource directory request response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006

DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 2 fields data length
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failed; 0x02: not supported; 0x03: Session ended
ITEM NUMBER	1	BYTE	Total number of resource directories

10. 3. 3 Query the audio and video resource directory request message

Link Type: Slave Link

Message direction: upper platform to lower platform

Sub-Business Type Identifier：DOWN_REALVIDEO_FILELIST_REQ。

Description: The government video supervision platform sends a request message to the enterprise video surveillance platform, or the upper-level government platform to the lower-level government platform to query the audio and video resource directory. The data body is shown in Table 49.

Table 49 Query the audio and video resource directory request data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 9 fields data length
CHANNEL ID	1	BYTE	Logical channel number, according to Table 2 in JT/T 1076—2016, 0 means all channels
START TIME	8	time t	Start time, YY-MM-DD-HH-MM-SS, all 0s Indicates no start time condition.
END TIME	8	time t	End time, YY-MM-DD-HH-MM-SS, all 0s Indicates no end time condition.

ALARM TYPE	8	BYTES	alarm type, Bit0-31 see the alarm flag bit definition in Table 18 in JT/T 808—2011; bit32-63 see Table 9; All 0s indicate no alarm type condition
AVITEM TYPE	1	BYTE	Audio and video type, 0: audio and video; 1: audio; 2: video, 3: video or audio and video
STREAM TYPE	1	BYTE	Code stream type, 0: all code streams, 1: main code stream, 2: sub code stream
MEM TYPE	1	BYTE	Storage type, 0: All storage 1: Main storage, 2: Disaster recovery storage
AUTHORIZE CODE	64	BYTES	time-limited password
GNSS DATA	36	BYTES	Any position within 5 minutes after the vehicle enters the cross-domain area, this field is only used for cross-domain access requests, according to the protocol in JT/T 809-2011 4.5.8.1

10. 3. 4 Querying the audio and video resource directory response message

Link Type: Slave Link

Message direction: lower platform to upper platform

Sub-Business Type Identifier：UP_REALVIDEO_FILELIST_REQ_ACK。

Description: The enterprise video surveillance platform responds to the government video surveillance platform or the lower-level government platform responds to the audio and video resource directory message to the upper-level government platform. The data body is shown in Table 50.

Table 50 Query the audio and video resource directory response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier

DATA LENGTH	4	uint32 t	Subsequent 3 fields data length
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failed; ; 0x02: not supported 0x03: session ended; 0x04: The aging password is incorrect; 0x05: Cross-domain conditions are not met
ITEM NUM	4	DWORD	Total number of resource catalog items
ITEM LIST			List of resource directory items, see table 47

10. 4 Remote video playback

10. 4. 1 Remote video playback request message

Link Type: Slave Link

Message direction: the initiator platform to the receiver platform

Sub-Business Type Identifier：DOWN_PLAYBACK_MSG_STARTUP。

Description: The government video supervision platform issues the order to request the video, audio and video of the vehicle to the enterprise video surveillance platform, the upper-level government platform to the lower-level government platform, or the cross-domain regional government platform to the local government platform. The data body is shown in Table 51.

Table 51 Remote video playback request data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 8 fields data length
CHANNEL ID	1	BYTE	Logical channel number, according to Table 2 in JT/T 1076—2016, 0 means all channels

AVITEM TYPE	1	BYTE	Audio and video type, 0: audio and video; 1: audio; 2: video, 3: video or audio and video
STREAM TYPE	1	BYTE	Code stream type, 0: all code streams, 1: main code stream, 2: sub code stream
MEM TYPE	1	BYTE	Storage type, 0: All storage 1: Main storage, 2: Disaster recovery storage
PLAYBACK STARTTIME	8	time	Playback start time，UTC Time
PLAYBACK ENDTIME	8	time t	Playback end time，UTC Time
AUTHORIZE CODE	64	BYTES	time-limited password
GNSS DATA	36	BYTES	Any position within 5 minutes after the vehicle enters the cross-domain area, this field is only used for cross-domain access requests, according to 4.5.8.1 in JT/T 809-2011

10. 4. 2 Remote video playback request response message

Link Type: Main Link

Message direction: the receiver platform to the initiator platform

Sub-Business Type Identifier: UP_PLAYBACK_MSG_STARTUP_ACK.

Description: The enterprise video surveillance platform responds to the government video supervision platform, the lower-level government platform responds to the upper-level government platform or the home region government platform responds to the video playback request message sent by the cross-domain regional government platform. Data body see Table 52.

Table 52 Remote video playback response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 3 fields data length
SERVER IP	32	Octet String	Enterprise Video Server IP Address
SERVER PORT	2	uint16 t	Enterprise Video Server Port Number
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failed; 0x02: not supported; 0x03: session ended; 0x04: The aging password is incorrect; 0x05: Cross-domain conditions are not met

10. 4. 3 Remote video playback control message

Link Type: Slave Link

Message direction: government video supervision platform to enterprise video surveillance platform

Sub-Business Type Identifier: DOWN_PLAYBACK_MSG_CONTROL.

Description: The government video surveillance platform issues this order to the enterprise video

surveillance platform to control playback. The data body is shown in Table 53.

Table 53 Remote video playback control data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 3 fields data length
CONTROL TYPE	1	BYTE	0x00: normal playback; 0x01: pause playback; 0x02: End playback; 0x03: Fast forward playback; 0x04: key frame fast rewind playback; 0x05: drag playback; 0x06: keyframe playback
FAST TIME	1	BYTE	Fast-forward or fast-rewind multiple, when the playback control is 0x03 and 0x04, the content of this field is valid, otherwise it is set to 0. 0x00: invalid; 0x01: 1x; 0x02: 2 times; 0x03: 4 times; 0x04: 8 times; 0x05: 16 times
DATE TIME	8	time t	The drag position, expressed in UTC time, when the playback control is 0x05, the content of this field is valid

10. 4. 4 Remote video playback control response message

Link Type: Slave Link

Message direction: enterprise video surveillance platform to government video supervision platform

Sub-Business Type Identifier：UP_PLAYBACK_MSG_CONTROL_ACK。

Description: The enterprise video surveillance platform responds to the playback control message issued by the government video surveillance platform. Data body see Table 54.

Table 54 Remote video playback response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 1 fields data length
RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failed; 0x02: not supported; 0x03: Session ended

10. 5 Remote video download

10. 5. 1 Remote video download request message

Link Type: Slave Link

Message direction: government video supervision platform to enterprise video surveillance platform

Sub-Business Type Identifier：DOWN_DOWNLOAD_MSG_STARTUP。

Description: The government video surveillance platform issues this order to the enterprise video surveillance platform to download the video, audio and video of the vehicle. The data body is shown in Table 55.

Table 55 Remote video download request data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 10 fields data length
CHANNEL ID	1	BYTE	Logical channel number, according to Table 2 in JT/T 1076—2016, 0 means all channels
START TIME	8	time t	UTC Time
END TIME	8	time t	UTC Time
ALARM TYPE	8	64BITS	bit0 ~ bit31 Refer to the definition of Alarm sign of Table 18 of JT / T 808—2011 ; bit32 ~ bit63 see table 10
AVITEM TYPE	1	BYTE	Audio and video types, defined as follows: 0x00: audio and video; 0x01: audio; 0x02: video
STREAM TYPE	1	BYTE	Stream type, defined as follows: 0x01: Main stream; 0x02: Sub stream

MEM TYPE	1	BYTE	Memory type, defined as follows: 0x01: main memory; 0x02: disaster recovery memory
FILE SIZE	4	uint32 t	file size in bytes (BYTE)
AUTHORIZE CODE	64	BYTES	time-limited password
GNSS DATA	36	BYTES	Any location within 5 minutes after the vehicle enters the cross-domain area, this field is only used for cross-domain access requests, see JT/T 809-2011 Protocol 4.5.8.1 for details

10. 5. 2 Remote video download request response message

Link Type: Main Link

Message direction: enterprise video surveillance platform to government video supervision platform

Sub-Business Type Identifier：UP_DOWNLOAD_MSG_STARTUP_ACK.

Description: The enterprise video surveillance platform responds to the request for downloading vehicle audio and video sent by the government video surveillance platform. Data body see Table 56.

Table 56 Remote video download request response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 2 fields data length

RESULT	1	BYTE	The response result is defined as follows: 0x00: success; 0x01: failed; ; 0x02: not supported 0x03: session ended; 0x04: The aging password is incorrect; 0x05: Cross-domain conditions are not met
SESSION ID	2	uint16 t	Corresponds to the serial number of the platform file upload message, valid when RESULT is 0

10. 5. 3 Remote video download completion notification message

Link Type: Slave Link

Message direction: government video supervision platform to enterprise video surveillance platform

Sub-Business Type Identifier：UP_DOWNLOAD_MSG_END_INFORM。

Description: The enterprise video surveillance platform sends to the government video surveillance platform to inform the government video surveillance platform that the video file has been downloaded from the terminal. The data body is shown in Table 5.

Table 57 Remote video download completion notification data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 7 fields data length
RESULT	1	BYTE	0x00: success, 0x01: failed
SESSION ID	2	uint16 t	Corresponds to the serial number of the platform file upload message, valid when RESULT is 0
SERVER IP	32	Octet String	FTP server ip address, when RESULT is 0 efficient

TCP PORT	2	uint16 t	FTP port, valid when RESULT is 0
USERNAEM	49	Octet String	FTP User name, valid when RESULT is 0
PASSWORD	22	Octet String	FTP Password, valid when RESULT is 0
FILE PATH	200	Octet String	File storage path， valid when RESULT is 0

10. 5. 4 Remote video download complete notification response message

Link Type: Slave Link

Message direction: government video supervision platform to enterprise video surveillance platform

Sub-Business Type Identifier：UP_DOWNLOAD_MSG_END_INFORM_ACK。

Description: The government video surveillance platform responds to the notification of the download completion of the enterprise video surveillance platform. Data body see Table 58.

Table 58 Remote video download completion notification response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 2 fields data length
RESULT	1	BYTE	Response result: 0x00: success; 0x01: failed; 0x02: not supported; 0x03: Session ended
SESSION ID	2	uint16 t	Corresponds to the serial number of the platform file upload message, valid when RESULT is 0

10. 5. 5 Remote video download control request message

Link Type: Slave Link

Message direction: government video supervision platform to enterprise video surveillance platform

Sub-Business Type Identifier：DOWN_DOWNLOAD_MSG_CONTROL。

Description: The government video surveillance platform sends a download control message to the enterprise video surveillance platform. The data body is shown in Table 59。

Table 59 Remote video download control request data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 2 fields data length
SESSION ID	2	uint16 t	The serial number corresponding to the platform file upload message
TYPE	1	BYTE	0x00: pause; 0x01: continue; 0x02: Cancel

10. 5. 6 Remote video download control request response message

Link Type: Main Link

Message direction: enterprise video surveillance platform to government video supervision platform

Sub-Business Type Identifier：UP_DOWNLOAD_MSG_CONTROL_ACK。

Description: The response message of the enterprise video surveillance platform to the download control request sent by the government video surveillance platform. Data body see Table 60.

Table 60 Remote video download control request response data body

Field name	Bit No.	Data Type	Description & request
VEHICLE NO	21	Octet String	License Plate Number
VEHICLE COLOR	1	BYTE	License plate color, as specified in 5.4.12 of JT/T 415-2006
DATA TYPE	2	uint16 t	Sub-Business Type Identifier
DATA LENGTH	4	uint32 t	Subsequent 1 fields data length
RESULT	1	BYTE	Response result: 0x00: success; 0x01: failed; 0x02: not supported; 0x03: Session ended

Appendix A (normative appendix)

Message comparison table between video terminal and video platform

The message comparison table of the communication protocol between the video terminal and the video platform is shown in Table A.1.

Table A. 1 Message comparison table between video terminal and video platform

No.	Message body name	Message ID	No.	Message body name	Message ID
1	Query terminal audio and video attributes	0x9003	12	file upload instruction	0x9206
2	Terminal upload audio and video attributes	0x1003	13	File upload completion notification	0x1206
3	Real-time audio and video transmission request	0x9101	14	File upload control	0x9207
4	Terminal upload passenger traffic	0x1005	15	PTZ rotation	0x9301
5	Audio and video real-time transmission control	0x9102	16	PTZ adjustment focus control	0x9302
6	Real-time audio and video streaming and transparent data transmission		17	Gimbal Adjustment Aperture Control	0x9303
7	Real-time audio and video transmission status notification	0x9105	18	PTZ wiper control	0x9304
8	Query resource list	0x9205	19	Infrared fill light control	0x9305
9	List of audio and video resources uploaded by the terminal	0x1205	20	PTZ zoom control	0x9306
10	The platform issues a remote video playback request	0x9201	21	Platform Manual Wakeup Request (Short Message)	WAKEUPXX
11	Remote video playback control issued by the platform	0x9202			