NT9666x Wi-Fi Command User Guide

Revision History

Revision	Date	Author	Changes
1.0	2015/05/26	Janice Huang	Create document and add first version description.
1.1	2015/09/10	Isiah Chang	// If card error occurred, return error code plus 3024.
1.2.	2015/11/24	Janice Huang	Add WIFIAPP_CMD_QUERY_MENUITEM command
1.3	2015/12/17	Isiah Chang	Added SEND_SSID_PASSPHRASE, SET_WIFI_CONNECT_MODE and WIFIAPP_CMD_UPLOAD commands.

Table of Content

1   Introduction

Wi-Fi commands is a HTTP protocol based command set which provides user to control NT9666x product while Wi-Fi on. User can use PC browser (ex: Windows Internet Explorer) or smart phone application to execute those commands; NT9666x product receives those commands would return perform result. Please refer to section 9 Demotrations to understand the operation flow. This document would detail the command usage for smart phone application developer

2   Features

- HTTP based commands are easy to use and speed up smartphone application develop time. User can use browser to send command.
- Socket communicate while system error.
- Those commands would be execute in UI task. While NT9666x receives commands, it would post event to UI task to execute. Therefore there is one command be executed one time.
- Can download file by HFS (HTTP File Server). The maximum file handle is 4.
- There is test.htm attached with the firmware. It is simple example for all command.

3 Operation flow

There is a schematic diagram to describe the Wi-Fi command operation flow as blow.
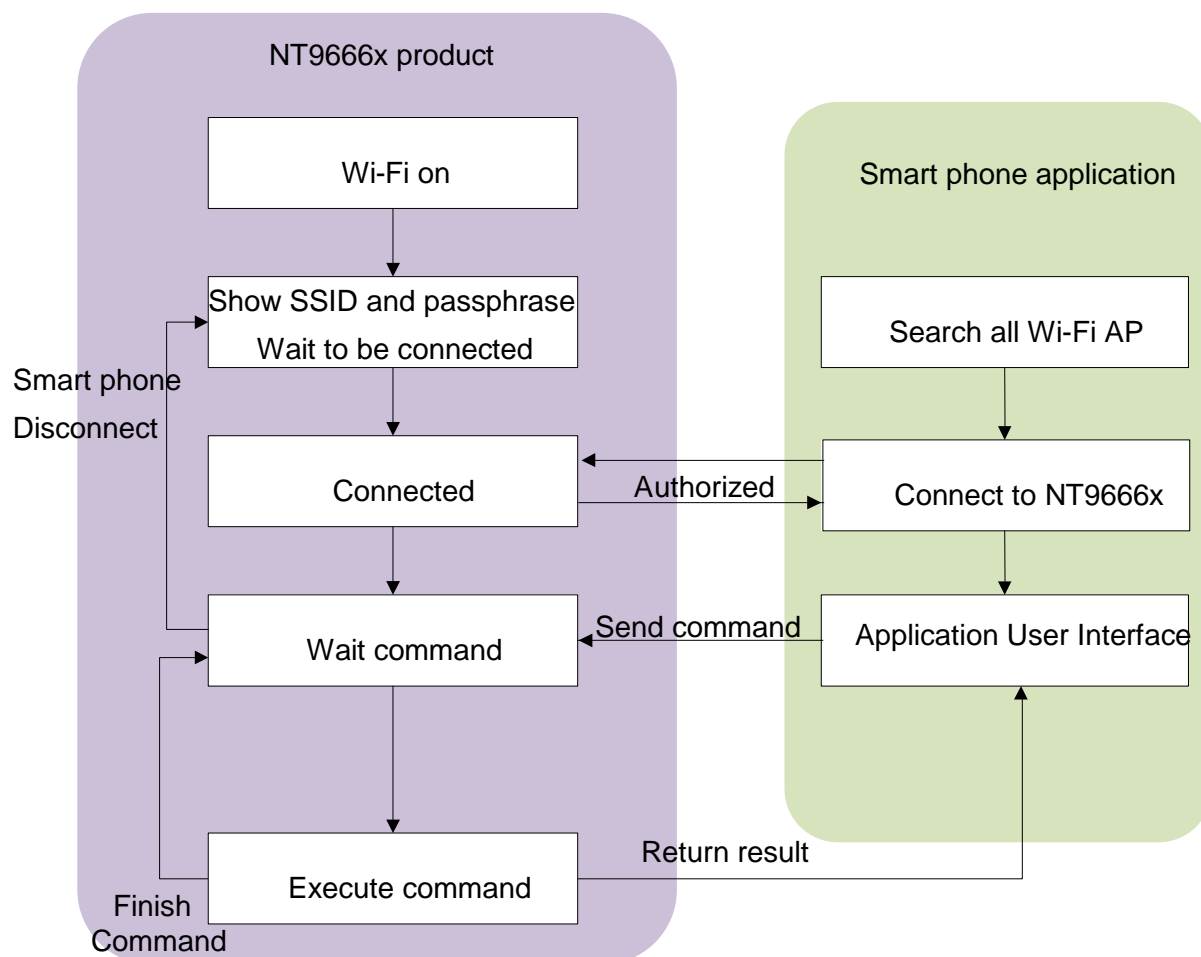
Figure 3.1 Wi-Fi Command operation flow

Most operations are in movie mode. There is a brief description about Wi-Fi movie mode state. In Wi-Fi movie mode, there are live view, record and idle three states. The state diagram is as bellow.
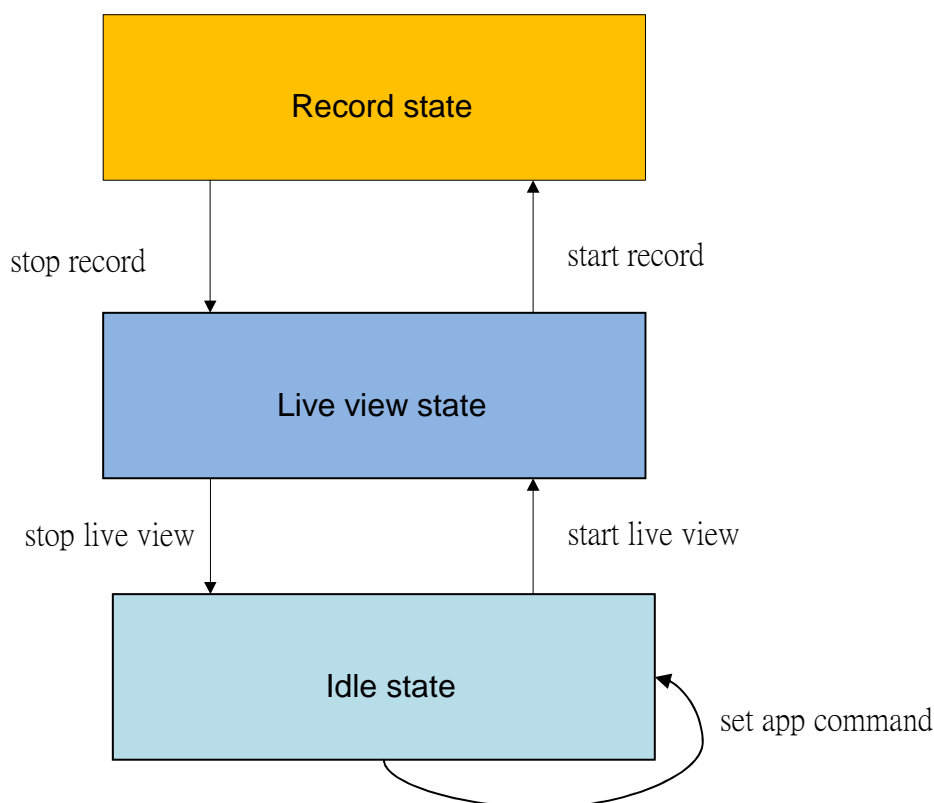
Figure 3.2 Wi-Fi movie mode state diagram

- Wi-Fi movie mode state
  - ☐ Movie record start would from live view state change to record state
  - ☐ Movie record stop would from record state change to live view state
  - ☐ Movie live view start would from idle state change to live view state
  - ☐ Movie live view stop would from live view state change to idle state
  - ☐ All movie menu setting should be in the idle state
  - ☐ There is no RTSP data stream in idle state; user should close RTSP client
    - ❖ When Movie record start and stop there is short time no RTSP data stream

4   Command

Catalog	Name	Command	Parameter Type
Photo	WIFIAPP_CMD_CAPTURE	1001	Null
	WIFIAPP_CMD_CAPTURESIZE	1002	Enumeration
	WIFIAPP_CMD_FREE_PIC_NUM	1003	Null
Movie	WIFIAPP_CMD_RECORD	2001	Start/stop
	WIFIAPP_CMD_MOVIE_REC_SIZE	2002	Enumeration
	WIFIAPP_CMD_CYCLIC_REC	2003	On/off
	WIFIAPP_CMD_MOVIE_HDR	2004	On/off
	WIFIAPP_CMD_MOVIE_EV	2005	Enumeration
	WIFIAPP_CMD_MOTION_DET	2006	On/off
	WIFIAPP_CMD_MOVIE_AUDIO	2007	On/off
	WIFIAPP_CMD_DATEIMPRINT	2008	On/off
	WIFIAPP_CMD_MAX_RECORD_TIME	2009	Null
	~~WIFIAPP_CMD_MOVIE_LIVEVIEW_SIZE~~	~~2010~~	~~Enumeration~~
	WIFIAPP_CMD_MOVIE_GSENSOR_SENS	2011	On/off
	WIFIAPP_CMD_SET_AUTO_RECORDING	2012	On/off
	WIFIAPP_CMD_MOVIE_REC_BITRATE	2013	Bit rate string
	WIFIAPP_CMD_MOVIE_LIVEVIEW_BITRATE	2014	Bit rate string
	WIFIAPP_CMD_MOVIE_LIVEVIEW_START	2015	Start/stop
	WIFIAPP_CMD_MOVIE_RECORDING_TIME	2016	Null
	WIFIAPP_CMD_MOVIE_REC_TRIGGER_RAWENC	2017	Null
	WIFIAPP_CMD_MOVIE_GET_RAWENC_JPG	2018	Null
Setup	WIFIAPP_CMD_MODECHANGE	3001	Enumeration
	WIFIAPP_CMD_QUERY	3002	Null
	WIFIAPP_CMD_SET_SSID	3003	string of SSD
	WIFIAPP_CMD_SET_PASSPHRASE	3004	string of passphrase
	WIFIAPP_CMD_SET_DATE	3005	YY-MM-DD string
	WIFIAPP_CMD_SET_TIME	3006	HH-MM-SS string

	WIFIAPP_CMD_POWEROFF	3007	Enumeration
	WIFIAPP_CMD_LANGUAGE	3008	Enumeration
	WIFIAPP_CMD_TVFORMAT	3009	Enumeration
	WIFIAPP_CMD_FORMAT	3010	Enumeration
	WIFIAPP_CMD_SYSRESET	3011	Null
	WIFIAPP_CMD_VERSION	3012	Null
	WIFIAPP_CMD_FWUPDATE	3013	Null
	WIFIAPP_CMD_QUERY_CUR_STATUS	3014	Null
	WIFIAPP_CMD_FILELIST	3015	Null
	WIFIAPP_CMD_HEARTBEAT	3016	Null
	WIFIAPP_CMD_DISK_FREE_SPACE	3017	Null
	WIFIAPP_CMD_RECONNECT_WIFI	3018	Null
	WIFIAPP_CMD_GET_BATTERY	3019	Null
	WIFIAPP_CMD_NOTIFY_STATUS	3020	Null
	WIFIAPP_CMD_SAVE_MENUINFO	3021	Null
	WIFIAPP_CMD_GET_HW_CAP	3022	Null
	WIFIAPP_CMD_REMOVE_USER	3023	Null
	WIFIAPP_CMD_GET_CARD_STATUS	3024	Null
	WIFIAPP_CMD_GET_DOWNLOAD_URL	3025	Null
	WIFIAPP_CMD_GET_UPDATEFW_PATH	3026	Null
	WIFIAPP_CMD_UPLOAD_FILE	3027	Null
	WIFIAPP_CMD_SET_PIP_STYLE	3028	Enumeration
	WIFIAPP_CMD_GET_SSID_PASSPHRASE	3029	Null
	WIFIAPP_CMD_QUERY_MOVIE_SIZE	3030	Null
	WIFIAPP_CMD_QUERY_MENUITEM	3031	Null
	WIFIAPP_CMD_SEND_SSID_PASSPHRASE	3032	SSID:Passphrase string
	WIFIAPP_CMD_SET_WIFI_CONNECT_MODE	3033	Enumeration
Playback	WIFIAPP_CMD_THUMB	4001	File path string
	WIFIAPP_CMD_SCREEN	4002	File path string
	WIFIAPP_CMD_DELETE_ONE	4003	File path string
	WIFIAPP_CMD_DELETE_ALL	4004	File path string
	WIFIAPP_CMD_MOVIE_FILE_INFO	4005	File path string
Upload	WIFIAPP_CMD_UPLOAD	5001	File path string

5 Usage

5.1 Photo mode

5.1.1 Capture

Start capture.

Command: http://192.168.1.254/?custom=1&cmd=1001

Parameter: Null

XML Return

```<?xml version="1.0" encoding="UTF-8" ?>```
 	
```- <Function>```
 	
```<Cmd>1001</Cmd>```
 	
```<Status>0</Status>```
 	
```- <File>```
 	
```<NAME>2000_0101_002223_001.JPG</NAME>```
 	
```<FPATH>A:\Novatek\Photo\2000_0101_002223_001.JPG</FPATH>```
 	
```</File>```
 	
```<FREEPICNUM>317</FREEPICNUM>```
 	
```</Function>```

Error status	value
WIFIAPP_RET_FILE_ERROR	(-5)
WIFIAPP_RET_STORAGE_FULL	(-11)
WIFIAPP_RET_FOLDER_FULL	(-12)

Note:

1. This command is only executed in photo mode. If system is not in photo mode, please change to photo mode by WIFIAPP_CMD_MODECHANGE first.

2. Before capture, please check free picture number by WIFIAPP_CMD_FREE_PIC_NUM.

(1) This command would return captured file and file path. It also returns free picture after capture.

5.1.2 Capture Size

Set capture size.

Command: http://192.168.1.254/?custom=1&cmd=1002&par=0

Parameter: Depend on project capture size enumeration; current value as below

Reference Parameter

enum _PHOTO_SIZE
{
    PHOTO_SIZE_12M,
    PHOTO_SIZE_10M,
    PHOTO_SIZE_8M,
    PHOTO_SIZE_5M,
    PHOTO_SIZE_3M,
    PHOTO_SIZE_VGA,
    PHOTO_SIZE_ID_MAX,
};

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>1002</Cmd> <Status>0</Status> </Function>

Note:

1. This command can execute in photo and movie mode.
2. User should check WIFIAPP_CMD_FREE_PIC_NUM if change capture size.

5.1.3 Free capture number

Get free capture number of current storage. This command would depend on different capture size to estimate the free picture numbers.

Command: http://192.168.1.254/?custom=1&cmd=1003

Parameter: Null

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>1003</Cmd> <Status>0</Status> <Value>378</Value> </Function>

Note:

1. Free picture number value 0 means there is on space for current capture size.

5.2   Movie mode

5.2.1   Movie record

Start and stop movie record.

Command: http://192.168.1.254/?custom=1&cmd=2001&par=1

Parameter: 1 means start record

0 means stop record

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>2001</Cmd> <Status>0</Status> </Function>

Error status	value
WIFIAPP_RET_MOVIE_FULL	(-7)
WIFIAPP_RET_MOVIE_WR_ERROR	(-8)
WIFIAPP_RET_MOVIE_SLOW	(-9)

Note:

1. This command would return until the frame data is ready to transmit. User should start RTSP client until this command response.

2. When live view state changes to record state, user should stop RTSP client until this command return, and then start RTSP client again. There would be short time no RTSP data while changing. Record state change to live view state is the same.

3. User should check WIFIAPP_CMD_MAX_RECORD_TIME before start record.

4. While recording, NT9666x would notify error status if it stops record by itself.
    ex: Card full, card error or slow card. Please refer to WIFIAPP_CMD_NOTIFY_STATUS command.

5. Recording cannot do any menu setting.

6. While record time < 1 sec, user cannot stop record. If user send stop record command; the command would fail.

5.2.2   Movie record size

Set movie record size.

Command: http://192.168.1.254/?custom=1&cmd=2002&par=1

Parameter: Depend on project movie size enumeration; user should get movie size capacity by command 5.3.30 Get movie size capacity

XML Return
<?xml version="1.0" encoding="UTF-8" ?>   - <Function>   <Cmd>2002</Cmd>   <Status>0</Status>   </Function>

Note:

1. User should check WIFIAPP_CMD_MAX_RECORD_TIME, if change movie record size.

5.2.3   Cyclic record

Set cyclic record value.

Command : http://192.168.1.254/?custom=1&cmd=2003&par=1

Parameter: depend on project movie cyclic record enumeration; current value as below

Reference Parameter
enum _MOVIE_CYCLICREC
{
MOVIE_CYCLICREC_OFF,
MOVIE_CYCLICREC_3MIN,
MOVIE_CYCLICREC_5MIN,
MOVIE_CYCLICREC_10MIN,
MOVIE_CYCLICREC_ID_MAX
};

XML Return
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>2003</Cmd>
<Status>0</Status>
</Function>

5.2.4 Movie HDR

Enable/Disable movie HDR.
Command: http://192.168.1.254/?custom=1&cmd=2004&par=0
Parameter:　1 means on
　　　　　　0 means off

XML Return
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>2004</Cmd>
<Status>0</Status>
</Function>

5.2.5 Movie EV

Set Movie EV value.

Command: http://192.168.1.254/?custom=1&cmd=2005&par=6

Parameter: depend on project movie EV enumeration; current value as below

Reference Parameter

enum _EXPOSURE
{
EV_P20,
EV_P16,
EV_P13,
EV_P10,
EV_P06,
EV_P03,
EV_00,
EV_N03,
EV_N06,
EV_N10,
EV_N13,
EV_N16,
EV_N20,
EV_SETTING_MAX,
};

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>2005</Cmd> <Status>0</Status> </Function>

Note:

1. This command should stop live view before setting and then start live view, the value would become effective.

5.2.6   Motion detection

Enable/Disable movie motion detection. While motion detection on, NT9666x detected moving object, it would notify user record started (WIFIAPP_RET_RECORD_STARTED) by socket. If no moving object more than 10 sec, it would notify user record stopped (WIFIAPP_RET_RECORD_STOPPED) by socket.

Command: http://192.168.1.254/?custom=1&cmd=2006&par=1

Parameter: 1 means on

0 means off

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>2006</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

Notify status	value
WIFIAPP_RET_RECORD_STARTED	1
WIFIAPP_RET_RECORD_STOPPED	2

Note:

1. This command would become effective while user start record by WIFIAPP_CMD_RECORD. In other words, users must start recording when users enable motion detection, this function will work.

5.2.7   Movie audio

Enable/Disable audio while recording.

Command: http://192.168.1.254/?custom=1&cmd=2007&par=1

Parameter: 1 means on

0 means off

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`

```
<Cmd>2007</Cmd>

<Status>0</Status>

</Function>
```

5.2.8   Movie date in print

Enable/Disable movie date in print.

Command: http://192.168.1.254/?custom=1&cmd=2008&par=1

Parameter: 1 means on

0 means off

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>2008</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

5.2.9   Movie max record time

Get movie max recording time depend on current bitrate. This command would get free space of current storage to calculate the max recording time. The unit is second.

Command: http://192.168.1.254/?custom=1&cmd=2009

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>2009</Cmd>`
 	
`<Status>0</Status>`
 	
`<Value>471</Value>`
 	
`</Function>`

5.2.10 Movie G-Sensor sensitivity

Enable/Disable movie G-Sensor sensitivity.

Command: http://192.168.1.254/?custom=1&cmd=2011&par=2

Parameter: depend on project G-sensor enumeration; current value as below

Reference Parameter
| ```
enum _GSENSOR
{
    GSENSOR_OFF = 0,
    GSENSOR_LOW,
    GSENSOR_MED,
    GSENSOR_HIGH,
    GSENSOR_ID_MAX,
};
``` |

XML Return
| ```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>2011</Cmd>
<Status>0</Status>
</Function>
``` |

5.2.11 Set auto-recording

Enable/Disable auto-recording. If enable, the system would auto-record while power-on or first time Wi-Fi on would auto-record.

Command: http://192.168.1.254/?custom=1&cmd=2012&par=1

Parameter: 1 means on

           0 means off

XML Return
| ```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>2012</Cmd>
``` |

```
<Status>0</Status>
</Function>
```

5.2.12 Movie record bitrate

Set movie record bitrate.

Command: http://192.168.1.254/?custom=1&cmd=2013&str=400

Parameter: record bitrate value. The unit is K byte/sec

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>2013</Cmd> <Status>0</Status> </Function>

Note:

1. User should care about movie record size and bitrate relationship. If bitrate is too small and movie size it too large; H264 cannot scale down to target bitrate.

2. The suggestion setting is as below

Movie size	Bitrate
1080p (1920*1080)	1450 K Byte/sec
720p	800 K Byte/sec
WVGA	400 K Byte/sec
VGA	400 K Byte/sec
1080p(1440*1080)	1450 K Byte/sec

5.2.13 Movie live view bitrate

Set movie live view bitrate.

Command: http://192.168.1.254/?custom=1&cmd=2014&str=300

Parameter: movie live view bitrate value

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>2014</Cmd>
<Status>0</Status>
</Function>
```

Note:

1. User should care about movie live view size and bitrate relationship. If bitrate is too small and movie size it too large; H264 cannot scale down to target bitrate.
2. The suggestion setting is as below

Movie size	Bitrate
720p	800 K Byte/sec
WVGA	400 K Byte/sec
VGA	400 K Byte/sec
360p	400 K Byte/sec
QVGA	300 K Byte/sec

5.2.14 Movie live view start

Start and stop movie live view.

Command: http://192.168.1.254/?custom=1&cmd=2015&par=1

Parameter:　1 means start live view

　　　　　　 0 means stop live view

XML Return

```<?xml version="1.0" encoding="UTF-8" ?>```
```- <Function>```
```<Cmd>2015</Cmd>```
```<Status>0</Status>```
```</Function>```

Note:

1. All movie menu setting should stop movie live view and then set. After setting user should start live view again.
2. While stop movie live view, RTSP client should also stop and start RTSP client until

movie live view start OK.

5.2.15 Movie recording time

Get movie recording time. The unit is second.

Command: http://192.168.1.254/?custom=1&cmd=2016

Parameter: Null

XML Return

```<?xml version="1.0" encoding="UTF-8" ?>```
```- <Function>```
```<Cmd>2016</Cmd>```
```<Status>0</Status>```
```<Value>0</Value>```
```</Function>```

Note:

1. The value 0 means is not recording
2. If cyclic record on, the recording time would reset depend on cyclic period.

5.2.16 Trigger RAW encode

Trigger RAW encode to save a JPEG frame in a DRAM buffer rather than a file.

Command: http://192.168.1.254/?custom=1&cmd=2017

Parameter: Null

XML Return

```<?xml version="1.0" encoding="UTF-8" ?>```
```- <Function>```
```<Cmd>2017</Cmd>```
```<Status>0</Status>```
```</Function>```

Note:

1. If the status returned 0, command WIFIAPP_CMD_MOVIE_GET_RAWENC_JPG can be sent to grab back the JPEG frame which is just taken.

2.   This command must be send while **movie recording**.

5.2.17 Get RAW encode JPEG

Grab back the JPEG frame which is just taken by command
WIFIAPP_CMD_MOVIE_REC_TRIGGER_RAWENC.

Command: http://192.168.1.254/?custom=1&cmd=2018

Parameter: Null

XML Return
The JPEG frame which is just taken.

If error, the NT9666x would return error status by a XML

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>2018</Cmd> <Status>-1</Status> </Function>

Error status	value
WIFIAPP_RET_NOFILE	(-1)

5.3   Command Setup

5.3.1   Mode change

Change system mode.

Command: http://192.168.1.254/?custom=1&cmd=3001&par=2

Parameter: Depend on project Wi-Fi mode enumeration; current value as below

Reference Parameter
typedef enum {

```
    WIFI_APP_MODE_PHOTO = 0,

    WIFI_APP_MODE_MOVIE,

    WIFI_APP_MODE_PLAYBACK,

    ENUM_DUMMY4WORD(WIFI_APP_MODE_CMD)

} WIFI_APP_MODE_CMD;
```

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3001</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

Note:

1. In Wi-Fi on photo mode, the system would start HTTP protocol and send motion JPG stream.

2. In Wi-Fi on movie mode, the system would start RTSP protocol and send H264 stream.

3. In Wi-Fi on playback mode, user can send command to play movie files by RTSP protocol.

5.3.2   Query status

Query current support command.

Command: http://192.168.1.254/?custom=1&cmd=3002

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>1001</Cmd>`
 	
`<Cmd>1002</Cmd>`
 	
`<Cmd>1003</Cmd>`
 	
`<Cmd>2016</Cmd>`
 	
`<Cmd>2001</Cmd>`
 	
`<Cmd>2002</Cmd>`

```
<Cmd>2003</Cmd>

<Cmd>2004</Cmd>

<Cmd>2005</Cmd>

<Cmd>2006</Cmd>

<Cmd>2007</Cmd>

<Cmd>2008</Cmd>

<Cmd>2009</Cmd>

<Cmd>2010</Cmd>

<Cmd>2011</Cmd>

<Cmd>2012</Cmd>

<Cmd>2013</Cmd>

<Cmd>2014</Cmd>

<Cmd>2015</Cmd>

<Cmd>3001</Cmd>

<Cmd>3002</Cmd>

<Cmd>3003</Cmd>

<Cmd>3004</Cmd>

<Cmd>3005</Cmd>

<Cmd>3006</Cmd>

<Cmd>3007</Cmd>

<Cmd>3008</Cmd>

<Cmd>3009</Cmd>

<Cmd>3010</Cmd>

<Cmd>3011</Cmd>

<Cmd>3012</Cmd>

<Cmd>3013</Cmd>

<Cmd>3014</Cmd>

<Cmd>3015</Cmd>

<Cmd>3016</Cmd>

<Cmd>3017</Cmd>

<Cmd>3018</Cmd>

<Cmd>3019</Cmd>

<Cmd>4001</Cmd>

<Cmd>4002</Cmd>

<Cmd>4003</Cmd>

<Cmd>4004</Cmd>
```

```
</Function>
```

5.3.3   Set SSID

Set Wi-Fi SSID. This command would become effective while reconnect Wi-Fi. After set SSID, user would reconnect Wi-Fi by WIFIAPP_CMD_RECONNECT_WIFI. The SSID would be kept in flash if NT9666x power off correctly.

Command: http://192.168.1.254/ ?custom=1&cmd=3003&str=ABCDE

Parameter: string of SSID name; max length is 32 bytes of number and characters mix

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>3003</Cmd> <Status>0</Status> </Function>

5.3.4   Set passphrase

Set Wi-Fi passphrase. This command would become effective while reconnect Wi-Fi. After set passphrase, user would reconnect Wi-Fi by WIFIAPP_CMD_RECONNECT_WIFI. The passphrase would be kept in flash if NT9666x power off correctly.

Command: http://192.168.1.254/ ?custom=1&cmd=3004&str=87654321

Parameter: string of passphrase ;max length is 26 bytes of number and characters mix

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>3004</Cmd> <Status>0</Status> </Function>

5.3.5 Set date

Set NT9666x system date.

Command: http://192.168.1.254/ ?custom=1&cmd=3005&str=2014-03-21

Parameter: string of date ; format would be yyyy-mm-dd

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3005</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

5.3.6 Set time

Set NT9666x system time.

Command: http://192.168.1.254/? custom=1&cmd=3006&str=17:10:30

Parameter: string of time ; format would be hh:mm:ss

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3006</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

5.3.7 Power off

Set system auto power off time.

Command: http://192.168.1.254/?custom=1&cmd=3007&par=1

Parameter: the enumeration of power off setting in project; current value as below:

Reference Parameter
`typedef enum`

```
{

    POWER_ON = 0,

    POWER_1MIN,

    POWER_2MIN,

    POWER_3MIN,

    POWER_5MIN,

    POWER_10MIN,

    POWEROFF_SETTING_MAX

}POWEROFF_SETTING;
```

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>3007</Cmd> <Status>0</Status> </Function>

5.3.8   Language

Select NT9666x language.

Command: http://192.168.1.254/?custom=1&cmd=3008&par=1

Parameter: the enumeration of language setting in project; current value as below:

Reference Parameter
enum _LANGUAGE { LANG_EN, LANG_FR, LANG_ES, LANG_PO, LANG_DE, LANG_IT, LANG_SC, LANG_TC, LANG_RU,

```
LANG_JP,

LANG_ID_MAX,

};
```

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3008</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

5.3.9 TV format

Set TV format while NT9666x output to TV.

Command: http://192.168.1.254/?custom=1&cmd=3009&par=1

Parameter: the enumeration of TV mode setting in project; current value as below:

Reference Parameter

`enum _TV_MODE`
 	
`{`
 	
`TV_MODE_NTSC,`
 	
`TV_MODE_PAL,`
 	
`TV_MODE_ID_MAX`
 	
`};`

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3009</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

5.3.10 Format

This command would format storage (SD card or flash memory) on NT9666x.

Command: http://192.168.1.254/?custom=1&cmd=3010&par=0

Parameter: 1 means format card

            0 means format nand/spi flash

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>3010</Cmd> <Status>0</Status> </Function>

5.3.11 System reset

Reset all setting to default. The system default value would be decided by project. The reset result would be the same as executing menu default setting.

Command: http://192.168.1.254/?custom=1&cmd=3011

Parameter: Null

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>3011</Cmd> <Status>0</Status> </Function>

5.3.12 Get version

Get project version.

Command: http://192.168.1.254/?custom=1&cmd=3012

Parameter: Null

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3012</Cmd>
<Status>0</Status>
<String>ECOSDEMO00010027</String>
</Function>
```

5.3.13 Firmware update

Start to update firmware. Firmware path would be defined by project. Before update ,user should upload FW file to NT9666x. If there is no firmware, it would return error

Command: http://192.168.1.254/?custom=1&cmd=3013

Parameter: Null

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3013</Cmd>
<Status>0</Status>
</Function>
```

Error status	value
WIFIAPP_RET_FW_WRITE_CHK_ERR	(-14)
WIFIAPP_RET_FW_READ2_ERR	(-15)
WIFIAPP_RET_FW_WRITE_ERR	(-16)
WIFIAPP_RET_FW_READ_CHK_ERR	(-17)
WIFIAPP_RET_FW_READ_ERR	(-18)
WIFIAPP_RET_FW_INVALID_STG	(-19)

Note:

1. Before update firmware should check battery level. Prevent shutdown suddenly while updating. After firmware update successfully, the system would auto power off. User should do system reset when power on next time.

2. User can refer to "6 FW update flow"

5.3.14 Query current status

Query all setting command status. This command is for user to synchronous NT9666x menu setting. The value would be the same as command parameter.

Command: http://192.168.1.254/?custom=1&cmd=3014

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
`- <Function>`
`<Cmd>1002</Cmd>`
`<Status>1</Status>`
`<Cmd>2016</Cmd>`
`<Status>0</Status>`
`<Cmd>2002</Cmd>`
`<Status>1</Status>`
`<Cmd>2003</Cmd>`
`<Status>1</Status>`
`<Cmd>2004</Cmd>`
`<Status>0</Status>`
`<Cmd>2005</Cmd>`
`<Status>6</Status>`
`<Cmd>2006</Cmd>`
`<Status>0</Status>`
`<Cmd>2007</Cmd>`
`<Status>1</Status>`
`<Cmd>2008</Cmd>`
`<Status>1</Status>`
`<Cmd>2009</Cmd>`
`<Status>1</Status>`
`<Cmd>2010</Cmd>`
`<Status>3</Status>`
`<Cmd>2011</Cmd>`
`<Status>2</Status>`
`<Cmd>2012</Cmd>`
`<Status>1</Status>`

```
<Cmd>3007</Cmd>

<Status>0</Status>

<Cmd>3008</Cmd>

<Status>0</Status>

<Cmd>3009</Cmd>

<Status>1</Status>

</Function>
```

5.3.15 File list

List all files sorting by file creating time. This command only is executed in playback mode only.

Command: http://192.168.1.254/?custom=1&cmd=3015

Parameter: Null

XML Return

```
<xml version="1.0" encoding="UTF-8" ?>

- <LIST>

- <ALLFile>

- <File>

<NAME>2000_0101_002223_001.JPG</NAME>

<FPATH>A:\NOVATEK\PHOTO\2000_0101_002223_001.JPG</FPATH>

<SIZE>2794693</SIZE>

<TIMECODE>673252044</TIMECODE>

<TIME>2000/01/01 00:22:24</TIME>

<ATTR>32</ATTR>

</File>

</ALLFile>

- <ALLFile>

- <File>

<NAME>2014_0516_093302_001.JPG</NAME>

<FPATH>A:\NOVATEK\PHOTO\2014_0516_093302_001.JPG</FPATH>

<SIZE>3068293</SIZE>

<TIMECODE>1152404513</TIMECODE>

<TIME>2014/05/16 09:33:02</TIME>
```

```
<ATTR>32</ATTR>

</File>

</ALLFile>

- <ALLFile>

- <File>

<NAME>2014_0516_115639_041.MOV</NAME>

<FPATH>A:\NOVATEK\MOVIE\2014_0516_115639_041.MOV</FPATH>

<SIZE>295976740</SIZE>

<TIMECODE>1152409459</TIMECODE>

<TIME>2014/05/16 11:59:38</TIME>

<ATTR>32</ATTR>

</File>

</ALLFile>

- <ALLFile>

- <File>

<NAME>2014_0516_120239_043.MOV</NAME>

<FPATH>A:\NOVATEK\MOVIE\2014_0516_120239_043.MOV</FPATH>

<SIZE>295911204</SIZE>

<TIMECODE>1152409779</TIMECODE>

<TIME>2014/05/16 12:05:38</TIME>

<ATTR>32</ATTR>

</File>

</ALLFile>

- <ALLFile>

- <File>

<NAME>2014_0516_120539_044.MOV</NAME>

<FPATH>A:\NOVATEK\MOVIE\2014_0516_120539_044.MOV</FPATH>

<SIZE>296107812</SIZE>

<TIMECODE>1152409875</TIMECODE>

<TIME>2014/05/16 12:08:38</TIME>

<ATTR>32</ATTR>

</File>

</ALLFile>

- <ALLFile>

- <File>

<NAME>2014_0516_120839_045.MOV</NAME>
```

```
<FPATH>A:\NOVATEK\MOVIE\2014_0516_120839_045.MOV</FPATH>

<SIZE>296075044</SIZE>

<TIMECODE>1152409971</TIMECODE>

<TIME>2014/05/16 12:11:38</TIME>

<ATTR>32</ATTR>

</File>

</ALLFile>

</LIST>
```

Note:

1. This command needs one file handle and temp buffer. Current NT9666x support 4 file handle max, if user need operate files at the same time. This command would occupy one file handle until command finish.

2. <ATTR> is file attribute. The value is the same as FAT file system file entry. The definition is as below.
    ex: <ATTR>33</ATTR> means (FS_ATTRIB_ACHIEVE | FS_ATTRIB_READ).

name	value	comment
FS_ATTRIB_READ	0x01	Bit 0, indicates the file is read only.
FS_ATTRIB_HIDDEN	0x02	Bit 1, indicates the file should not be shown in normal directory listings.
FS_ATTRIB_SYSTEM	0x04	Bit 2, indicates the file is an operating system file.
FS_ATTRIB_VOLUME	0x08	3, indicates the entry is the label for the volume.
FS_ATTRIB_DIRECTORY	0x10	bit 4, indicates it is a directory
FS_ATTRIB_ACHIEVE	0x20	bit 5, indicates the file has been created or modified since the attribute was clear

5.3.16 Heartbeat

This command is for smartphone to check NT9666x if exist. If it is alive would return result, otherwise it would not return.

Command: http://192.168.1.254/?custom=1&cmd=3016

Parameter: Null

XML Return
`<?xml version="1.0" encoding="UTF-8" ?>`

```
- <Function>
<Cmd>3016</Cmd>
<Status>0</Status>
</Function>
```

5.3.17 Get disk free space

Get free space of file system mounting storage (nand/spi flash or SD card, usually is SD card).The unit is byte.

Command: http://192.168.1.254/?custom=1&cmd=3017

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3017</Cmd>`
 	
`<Status>0</Status>`
 	
`<Value>5159288832</Value>`
 	
`</Function>`

Note:

1. Free space would be 64 bit digital number.

5.3.18 Reconnect Wi-Fi

Disconnect Wi-Fi and connect Wi-Fi again.

Command: http://192.168.1.254/?custom=1&cmd=3018

Parameter: Null

XML Return
No return Value. Wi-Fi restarts. NT9666x would be in wait to connect screen

Note:

1. Some commands (SSID and passphrase setting) need to reconnect Wi-Fi. The setting

value would become effective.

5.3.19 Get battery level

Get battery level. If NT9666x charged, it would return charged.

Command: http://192.168.1.254/?custom=1&cmd=3019

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3019</Cmd>`
 	
`<Status>0</Status>`
 	
`<Value>5</Value>`
 	
`</Function>`

Return value : depend on project battery status enumeration; current value as below

Reference return value
| ```
typedef enum
{
    BATTERY_FULL = 0,
    BATTERY_MED,
    BATTERY_LOW,
    BATTERY_EMPTY,
    BATTERY_EXHAUSTED,
    BATTERY_CHARGE,
    BATTERY_STATUS_TOTAL_NUM
} BATTERY_STATUS;
``` |

5.3.20 Notify status

This is a command NT9666x initiate to client. It is not a HTTP protocol based command. User need to create socket to connect to server. Port number is 3333. The socket needs to connect while smartphone application connects to Wi-Fi. The NT9666x would notify app by user socket while there are system error.

ex: battery low, card full while recording, card error while recording and slow card while recording.

The data format which the socket received is as bellow.

XML Return
<?xml version="1.0" encoding="UTF-8" ?> – <Function> <Cmd>3020</Cmd> <Status>-10</Status> </Function>

Note:

1.   User can refer to "8 list" to know all status value.

5.3.21 Save menu information

Save all menu setting to flash memory
Command: http://192.168.1.254/?custom=1&cmd=3021
Parameter: Null

XML Return
<?xml version="1.0" encoding="UTF-8" ?> – <Function> <Cmd>3021</Cmd> <Status>0</Status> </Function>

5.3.22 Get hardware capacity

Get NT9666x hardware capacity. App can get the current NT9666x hardware components.
The component list is defined by project.
Command: http://192.168.1.254/?custom=1&cmd=3022
Parameter: Null

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3022</Cmd>
<Status>0</Status>
<Value>3</Value>
</Function>
```

5.3.23 Remove last user

There is only one user can connect to NT9666x at the same time. This command provide new connect to kick off last connection. NT9666x would notify last connection would be disconnected (WIFIAPP_RET_REMOVE_BY_USER) by socket.

Command: http://192.168.1.254/?custom=1&cmd=3023

Parameter: Null

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3023</Cmd>
<Status>0</Status>
</Function>
```

Notify status	value
WIFIAPP_RET_DISCONNECT	(7)

5.3.24 Get card status

Get SD card status. If SD card unplug, movie recording or capture would fail, but user still can live view.

Command: http://192.168.1.254/?custom=1&cmd=3024

Parameter: Null

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>

- <Function>

<Cmd>3024</Cmd>

<Status>0</Status>

<Value>1</Value>

</Function>
```

Return value: depend on project card status enumeration; current value as below

Reference return value

```
typedef enum

{

    CARD_REMOVED = 0,

    CARD_INSERTED,

    CARD_LOCKED

} CARD_STATUS;


// If card error occurred, return below error code plus 3024. For Example, if rereturn value is 3025,

that means FS_UNKNOWN_FORMAT (3024 + 1).

typedef enum

{

    FS_DISK_ERROR = 0,

    FS_UNKNOWN_FORMAT,

    FS_UNFORMATTED,

    FS_NOT_INIT,

    FS_INIT_OK,

    FS_NUM_FULL

} FS_STATUS;
```

Note:

1. User should check WIFIAPP_CMD_GET_CARD_STATUS before start record or live view.

5.3.25 Get download URL

Get download URL. The URL is usually manufacture proprietary website. The web site would keep new version information. The app should analysis the document of version

information, and then check the NT9666x FW version to decide if need to update. There are download link, and the FW authentication method in the document.

Command: http://192.168.1.254/?custom=1&cmd=3025

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>3025</Cmd>`
 	
`<Status>0</Status>`
 	
`<String>http://115.29.201.46:8020/download/filedesc.xml</String>`
 	
`</Function>`

Example of filedesc.xml:

XML description

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`<DownloadDesc>`
 	
`<FilePath>http://115.29.201.46:8020/download/FW96655A.bin</FilePath>`
 	
`<Version>CDV.001.001.001</Version>`
 	
`<CheckMethord>none</CheckMethord>`
 	
`<CheckValue>0</CheckValue>`
 	
`</DownloadDesc>`

Note:

1.   User can refer to "6 FW update flow"

5.3.26 Get update FW path

Get update FW path. The NT9666x would read new version FW in this path to update. Therefore app would upload new FW to the assigned path according this command.

Command: http://192.168.1.254/?custom=1&cmd=3026

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`

```
<Cmd>3026</Cmd>

<Status>0</Status>

<String>http://192.168.1.254/Fw96655A.bin</String>

</Function>
```

Note:

1.   User can refer to "6 FW update flow"

5.3.27 Result of HFS upload file

This is only a command ID for HFS upload file result. After app uploaded file, NT9666x would return xml format result. 3027 is only update command ID in xml.

XML Return

```<?xml version="1.0" encoding="UTF-8" ?>```
 ```- <Function>```
 ```<Cmd>3027</Cmd>```
 ```<Status>0</Status>```
 ```</Function>```

Return status	value	comment
CYG_HFS_UPLOAD_OK	(0)	upload file ok
CYG_HFS_UPLOAD_FAIL_FILE_EXIST	(-1)	upload file fail because of file exist
CYG_HFS_UPLOAD_FAIL_RECEIVE_ERROR	(-2)	receive data has some error
CYG_HFS_UPLOAD_FAIL_WRITE_ERROR	(-3)	write file has some error
CYG_HFS_UPLOAD_FAIL_FILENAME_EMPTY	(-4)	file name is empty

5.3.28 Setup PIP Style

Set PIP (Picture in Picture) style for live view streaming (HTTP + MJPG).
Command: http://192.168.1.254/?custom=1&cmd=3028&par=1
Parameter: the enumeration of PIP_STYLE setting in project; current value is as below:

Reference Parameter
```enum _DUALCAM_SETTING```

```
{
    DUALCAM_FRONT,

    DUALCAM_BEHIND,

    DUALCAM_BOTH,    //FRONT is major

    DUALCAM_BOTH2,   //BEHIND is major

    DUALCAM_SETTING_MAX
}; //PIP Styoe setting
```

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>

- <Function>

<Cmd>3028</Cmd>

<Status>0</Status>

</Function>
```

5.3.29 Get SSID and passphrase

If Wi-Fi AP mode is enable. User can get SSID and passphrase via this command.
Command: http://192.168.1.254/?custom=1&cmd=3029
Parameter: Null

XML Return

```
<?xml version="1.0" encoding="UTF-8" ?>

- <List>

<SSID> NVT_CARDV_xxxxxx</SSID>

< PASSPHRASE>12345678</PASSPHRASE>

</List>
```

5.3.30 Get movie size capacity

List all supported movie record size. Different model might support different size, app should query movie size list first. If type is MOVIE_REC_TYPE_FRONT means this size is support only record file, no RTSP streaming. The resolution or frame rate is much bigger, therefore system could not support 2 path output.

Command: http://192.168.1.254/?custom=1&cmd=3030

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
- `<LIST>`
 	
- `<Item>`
 	
  `<Name>UHD P24</Name>`
 	
  `<Index>0</Index>`
 	
  `<Size>2880*2160</Size>`
 	
  `<FrameRate>24</FrameRate>`
 	
  `<Type>1</Type>`
 	
  `</Item>`
 	
- `<Item>`
 	
  `<Name>QHD P30</Name>`
 	
  `<Index>1</Index>`
 	
  `<Size>2560*1440</Size>`
 	
  `<FrameRate>30</FrameRate>`
 	
  `<Type>4</Type>`
 	
  `</Item>`
 	
- `<Item>`
 	
  `<Name>FHD P60</Name>`
 	
  `<Index>4</Index>`
 	
  `<Size>1920*1080</Size>`
 	
  `<FrameRate>60</FrameRate>`
 	
  `<Type>4</Type>`
 	
  `</Item>`
 	
- `<Item>`
 	
  `<Name>FHD P30</Name>`
 	
  `<Index>5</Index>`
 	
  `<Size>1920*1080</Size>`
 	
  `<FrameRate>30</FrameRate>`
 	
  `<Type>4</Type>`
 	
  `</Item>`
 	
- `<Item>`
 	
  `<Name>HD P120</Name>`

```
 <Index>6</Index>

 <Size>1280*720</Size>

 <FrameRate>120</FrameRate>

 <Type>1</Type>

 </Item>

- <Item>

 <Name>HD P60</Name>

 <Index>7</Index>

 <Size>1280*720</Size>

 <FrameRate>60</FrameRate>

 <Type>1</Type>

 </Item>

- <Item>

 <Name>HD P30</Name>

 <Index>8</Index>

 <Size>1280*720</Size>

 <FrameRate>30</FrameRate>

 <Type>4</Type>

 </Item>

- <Item>

 <Name>WVGA P30</Name>

 <Index>9</Index>

 <Size>848*480</Size>

 <FrameRate>30</FrameRate>

 <Type>4</Type>

 </Item>

- <Item>

 <Name>VGA P240</Name>

 <Index>10</Index>

 <Size>640*480</Size>

 <FrameRate>240</FrameRate>

 <Type>1</Type>

 </Item>

- <Item>

 <Name>VGA P30</Name>

 <Index>11</Index>
```

```
  <Size>640*480</Size>

  <FrameRate>30</FrameRate>

  <Type>4</Type>

  </Item>

 </LIST>
```

Type is movie record type, emulation is below:

Reference record type

typedef enum _MOVIE_REC_TYPE{
 	
   MOVIE_REC_TYPE_UNKNOWN,
 	
   MOVIE_REC_TYPE_FRONT,
 	
   MOVIE_REC_TYPE_BEHIND,
 	
   MOVIE_REC_TYPE_DUAL,
 	
   MOVIE_REC_TYPE_CLONE,
 	
}MOVIE_REC_TYPE;

5.3.31 Query menu item

List all supported menu item except movie size. Different model might support different menu item, app should query menu itme and movie size list first.

Command: http://192.168.1.254/?custom=1&cmd=3031&str=all

Parameter: Null

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <LIST> - <Item>   <Cmd>1002</Cmd>   <Name>PHOTO_SIZE</Name> - <MenuList> - <Option>   <Index>0</Index>   <Id>12M</Id>   </Option> - <Option>   <Index>1</Index>

```
      <Id>10M</Id>
    </Option>
-  <Option>
    <Index>2</Index>
    <Id>8M</Id>
    </Option>
-  <Option>
    <Index>3</Index>
    <Id>5M</Id>
    </Option>
-  <Option>
    <Index>4</Index>
    <Id>3M</Id>
    </Option>
-  <Option>
    <Index>5</Index>
    <Id>VGA</Id>
    </Option>
    </MenuList>
    </Item>
-  <Item>
    <Cmd>2003</Cmd>
    <Name>MOVIE_CYCLIC_REC</Name>
-  <MenuList>
-  <Option>
    <Index>0</Index>
    <Id>OFF</Id>
    </Option>
-  <Option>
    <Index>1</Index>
    <Id>3MIN</Id>
    </Option>
-  <Option>
    <Index>2</Index>
    <Id>5MIN</Id>
    </Option>
```

```
- <Option>

  <Index>3</Index>

  <Id>10MIN</Id>

  </Option>

  </MenuList>

  </Item>

- <Item>

  <Cmd>2004</Cmd>

  <Name>MOVIE_WDR</Name>

- <MenuList>

- <Option>

  <Index>0</Index>

  <Id>OFF</Id>

  </Option>

- <Option>

  <Index>1</Index>

  <Id>ON</Id>

  </Option>

  </MenuList>

  </Item>

- <Item>

  <Cmd>2005</Cmd>

  <Name>EV</Name>

- <MenuList>

- <Option>

  <Index>0</Index>

  <Id>+2.0</Id>

  </Option>

- <Option>

  <Index>1</Index>

  <Id>+1.6</Id>

  </Option>

- <Option>

  <Index>2</Index>

  <Id>+1.3</Id>

  </Option>
```

```
-  <Option>

   <Index>3</Index>

   <Id>+1.0</Id>

   </Option>

-  <Option>

   <Index>4</Index>

   <Id>+0.6</Id>

   </Option>

-  <Option>

   <Index>5</Index>

   <Id>+0.3</Id>

   </Option>

-  <Option>

   <Index>6</Index>

   <Id>0.0</Id>

   </Option>

-  <Option>

   <Index>7</Index>

   <Id>-0.3</Id>

   </Option>

-  <Option>

   <Index>8</Index>

   <Id>-0.6</Id>

   </Option>

-  <Option>

   <Index>9</Index>

   <Id>-1.0</Id>

   </Option>

-  <Option>

   <Index>10</Index>

   <Id>-1.3</Id>

   </Option>

-  <Option>

   <Index>11</Index>

   <Id>-1.6</Id>

   </Option>
```

```
- <Option>

  <Index>12</Index>

  <Id>-2.0</Id>

  </Option>

  </MenuList>

  </Item>

- <Item>

  <Cmd>2006</Cmd>

  <Name>MOVIE_MOTION_DET</Name>

- <MenuList>

- <Option>

  <Index>0</Index>

  <Id>OFF</Id>

  </Option>

- <Option>

  <Index>1</Index>

  <Id>ON</Id>

  </Option>

  </MenuList>

  </Item>

- <Item>

  <Cmd>2007</Cmd>

  <Name>MOVIE_AUDIO</Name>

- <MenuList>

- <Option>

  <Index>0</Index>

  <Id>OFF</Id>

  </Option>

- <Option>

  <Index>1</Index>

  <Id>ON</Id>

  </Option>

  </MenuList>

  </Item>

- <Item>

  <Cmd>2008</Cmd>
```

```
  <Name>MOVIE_DATEIMPRINT</Name>
- <MenuList>
- <Option>
  <Index>0</Index>
  <Id>OFF</Id>
  </Option>
- <Option>
  <Index>1</Index>
  <Id>ON</Id>
  </Option>
  </MenuList>
  </Item>
- <Item>
  <Cmd>2011</Cmd>
  <Name>GSENSOR</Name>
- <MenuList>
- <Option>
  <Index>0</Index>
  <Id>OFF</Id>
  </Option>
- <Option>
  <Index>1</Index>
  <Id>LOW</Id>
  </Option>
- <Option>
  <Index>2</Index>
  <Id>MED</Id>
  </Option>
- <Option>
  <Index>3</Index>
  <Id>HIGH</Id>
  </Option>
  </MenuList>
  </Item>
- <Item>
  <Cmd>2012</Cmd>
```

```
    <Name>WIFI_AUTO_RECORDING</Name>
-   <MenuList>
-   <Option>
    <Index>0</Index>
    <Id>OFF</Id>
    </Option>
-   <Option>
    <Index>1</Index>
    <Id>ON</Id>
    </Option>
    </MenuList>
    </Item>
-   <Item>
    <Cmd>3007</Cmd>
    <Name>AUTO_POWER_OFF</Name>
-   <MenuList>
-   <Option>
    <Index>0</Index>
    <Id>ON</Id>
    </Option>
-   <Option>
    <Index>1</Index>
    <Id>1MIN</Id>
    </Option>
-   <Option>
    <Index>2</Index>
    <Id>2MIN</Id>
    </Option>
-   <Option>
    <Index>3</Index>
    <Id>3MIN</Id>
    </Option>
-   <Option>
    <Index>4</Index>
    <Id>5MIN</Id>
    </Option>
```

```
- <Option>

  <Index>5</Index>

  <Id>10MIN</Id>

  </Option>

  </MenuList>

  </Item>

- <Item>

  <Cmd>3008</Cmd>

  <Name>LANGUAGE</Name>

- <MenuList>

- <Option>

  <Index>0</Index>

  <Id>EN</Id>

  </Option>

- <Option>

  <Index>1</Index>

  <Id>FR</Id>

  </Option>

- <Option>

  <Index>2</Index>

  <Id>ES</Id>

  </Option>

- <Option>

  <Index>3</Index>

  <Id>PO</Id>

  </Option>

- <Option>

  <Index>4</Index>

  <Id>DE</Id>

  </Option>

- <Option>

  <Index>5</Index>

  <Id>IT</Id>

  </Option>

- <Option>

  <Index>6</Index>
```

```
  <Id>SC</Id>
 </Option>
- <Option>
 <Index>7</Index>
 <Id>TC</Id>
 </Option>
- <Option>
 <Index>8</Index>
 <Id>RU</Id>
 </Option>
- <Option>
 <Index>9</Index>
 <Id>JP</Id>
 </Option>
 </MenuList>
 </Item>
- <Item>
 <Cmd>3009</Cmd>
 <Name>TV_MODE</Name>
- <MenuList>
- <Option>
 <Index>0</Index>
 <Id>NTSC</Id>
 </Option>
- <Option>
 <Index>1</Index>
 <Id>PAL</Id>
 </Option>
 </MenuList>
 </Item>
 <CHK>A6B7</CHK>
 </LIST>
```

5.3.32   Send SSID and passphrase

APP can issue this command to send SSID and passphrase to deivce. APP should also issue command (3033) to notify device to switch to station mode thereafter.

Command : http://192.168.1.254/?custom=1&cmd=3032&str=SSID:passphrase

Parameter : string of SSID and passphrase

Return :

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3032</Cmd>
<Status>0</Status>
</Function>
```

5.3.33   Set Wi-Fi connection mode

Select Wi-Fi mode. After given SSID and passphrase by issuing command 3032. APP can switch device to station mode by this command. Then issue command 3018 to do re-conncetion.

Command :http://192.168.1.254/?custom=1&cmd=3033&par=1

Parameter : the enumeration of mode setting in project; current value as below:

```
typedef enum
{
    NETWORK_AP_MODE = 0,
    NETWORK_STATION_MODE,
}NETWORK_MODE_SETTING;
```

Return :

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3033</Cmd>
<Status>0</Status>
</Function>
```

5.4   Playback mode

All playback mode command needs to change to playback mode first; otherwise there would be not enough free memory.

5.4.1   Get thumbnail

Get photo or movie file thumbnail. Movie thumbnail would be first frame of the movie file.
Command:

http://192.168.1.254/NOVATEK/MOVIE/2014_0321_011922_002.MOV?custom=1&cmd=4001

XML Return
The thumbnails data. There would be JPG data.

If error, the NT9666x would return error status by xml

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>4001</Cmd> <Status>-1</Status> </Function>

Error status	value
WIFIAPP_RET_NOFILE	(-1)
WIFIAPP_RET_EXIF_ERR	(-2)
WIFIAPP_RET_NOBUF	(-3)

5.4.2   Get screennail

Get photo or movie file screennail. Movie screennail would be first frame of the movie file.
Command :

http://192.168.1.254/NOVATEK/MOVIE/2014_0321_011922_002.MOV?custom=1&cmd=4002

XML Return
The screennails data. There would be JPG data.

If error, the NT9666x would return error status by xml

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>4001</Cmd> <Status>-1</Status> </Function>

Error status	value
WIFIAPP_RET_NOFILE	(-1)
WIFIAPP_RET_EXIF_ERR	(-2)
WIFIAPP_RET_NOBUF	(-3)

5.4.3 Delete one file

Delete the specific file in NT9666x

Command:

Http://192.168.1.254/?custom=1&cmd=4003&str=A:\CARDV\PHOTO\2014_0506_000000.0001.JPG

Parameter: string format would be the same as file path

XML Return
<?xml version="1.0" encoding="UTF-8" ?> - <Function> <Cmd>4003</Cmd> <Status>0</Status> </Function>

Error status	value
WIFIAPP_RET_FILE_LOCKED	(-4)
WIFIAPP_RET_FILE_ERROR	(-5)

WIFIAPP_RET_DELETE_FAILED	(-6)

5.4.4 Delete all

Delete the all photo and movie files in NT9666x

Command: http://192.168.1.254/?custom=1&cmd=4004

Parameter: Null

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>4004</Cmd>`
 	
`<Status>0</Status>`
 	
`</Function>`

5.4.5 Get Movie file information

Get movie file information which included width, height and length.

Command:
http://192.168.1.254/NOVATEK/MOVIE/2014_0321_011922_002.MOV?custom=1&cmd=4005

Return width, height and length by a XML.

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
 	
`- <Function>`
 	
`<Cmd>4005</Cmd>`
 	
`<Status>0</Status>`
 	
`<String>Width:1920, Height:1080, Length:51 sec</String>`
 	
`</Function>`

If error, the NT9666x would return error status by a XML.

XML Return
`<?xml version="1.0" encoding="UTF-8" ?>`

```
- <Function>
<Cmd>4005</Cmd>
<Status>-1</Status>
</Function>
```

Error status	value
WIFIAPP_RET_NOFILE	(-1)
WIFIAPP_RET_EXIF_ERR	(-2)
WIFIAPP_RET_NOBUF	(-3)
WIFIAPP_RET_PAR_ERR	(-21)

5.5 Update FW via HFS

APP can do FW update via this command directly. Below is an example HTML file to do FW update via HFS.

<html>
<body>

<form name=frm2 action="**http://192.168.1.254/?custom=1&cmd=5001&par=1**"
method=post enctype="multipart/form-data"><input name=fileupload2 size=70
type=file>
<input name=upbtn type=submit value="Upload Custom files"></form></div>
</body>
</html>

6 FW update flow

1. The app gets the version information from internet. The app can get version URL by app command. The URL corresponding to a version description document (Command to get version information Web site: 5.3.25 Get download URL).

2. The app downloads the description document from a network server (ex: filedesc.XML).

3. The app analysis of this document. The document includes the NT9666x latest FW version number, download link, and the FW authentication method.

4. The app compares the version number with NT9666x current version, if need to upgrade FW, Downloaded, verified.

5. User clicks upgrade on the app; the app would upload the new version to NT9666x specified path (Command to get the upload path: 5.3.26 Get update FW path), and then executes FW update command (Command for FW Update: 5.3.13 Firmware update). NT9666x will automatically shut down after upgrade successfully. Before shutdown, NT9666x would notify the app.

6. Notifications of shutdown after upgrade successfully

XML Return

`<?xml version="1.0" encoding="UTF-8" ?>`
`- <Function>`
`<Cmd>3020</Cmd>`
`<Status>6</Status>`
`</Function>`

7   Comment

1. All setting command would not be kept if NT9666x shutdown abnormally. User can save setting immediately by save menu information command manually (5.3.21 Save menu information). Otherwise those setting would be saved until NT9666x power off correctly.
2. The parameter of all commands might be changed by different projects. Those enumerations would be the same as NT9666x menu. Therefore the setting value should be synchronized by WIFIAPP_CMD_QUERY_CUR_STATUS command. After Wi-Fi command set, the menu selected value would be changed.
3. If user wants to download files by HFS and execute commands at the same time, user should care about file handle number. The max file handles is 4. Some commands would use one file handle (ex: capture, movie record, file list and delete file etc…).
4. All movie setting should stop live view and then start live view after setting. It would cost time. If user want to speed up setting time, user can stop live view when enter menu; configure all setting and then start live view while leaving menu.

```
Original setting

http://192.168.1.254/?custom=1&cmd=2015&par=0  // stop live view

http://192.168.1.254/?custom=1&cmd=2010&par=0  // set live view size

http://192.168.1.254/?custom=1&cmd=2015&par=1  // start live view


http://192.168.1.254/?custom=1&cmd=2015&par=0  // stop live view

http://192.168.1.254/?custom=1&cmd=2007&par=1  // set audio on

http://192.168.1.254/?custom=1&cmd=2015&par=1  // start live view
```

```
Speed up setting

http://192.168.1.254/?custom=1&cmd=2015&par=0   // stop live view

http://192.168.1.254/?custom=1&cmd=2010&par=0   // set live view size

http://192.168.1.254/?custom=1&cmd=2007&par=1   // set audio on

http://192.168.1.254/?custom=1&cmd=2008&par=1   // set date in print

http://192.168.1.254/?custom=1&cmd=2015&par=1   // start live view
```
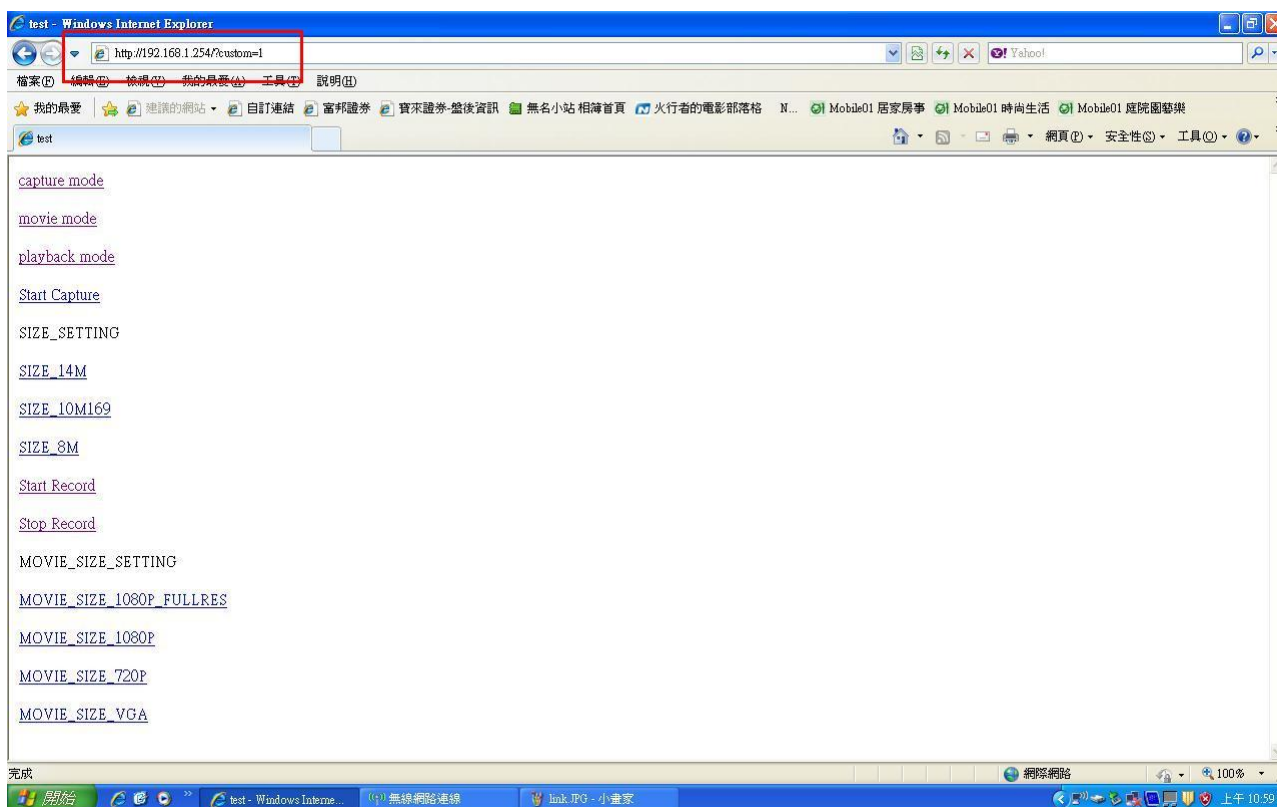
8   Error code list

Error status	value	comments
WIFIAPP_RET_OK	0	Execute successful
WIFIAPP_RET_RECORD_STARTED	1	Record is started
WIFIAPP_RET_RECORD_STOPPED	2	Record is stop
WIFIAPP_RET_DISCONNECT	3	Wi-Fi would be disconnect
WIFIAPP_RET_MIC_ON	4	Notify app NT9666x is microphone on
WIFIAPP_RET_MIC_OFF	5	Notify app NT9666x is microphone off
WIFIAPP_RET_POWER_OFF	6	Notify app NT9666x power off
WIFIAPP_RET_REMOVE_BY_USER	7	Notify app is disconnected, because new user connected to NT9666x
WIFIAPP_RET_NOFILE	-1	No file
WIFIAPP_RET_EXIF_ERR	-2	File EXIF error
WIFIAPP_RET_NOBUF	-3	No buffer
WIFIAPP_RET_FILE_LOCKED	-4	File is read only
WIFIAPP_RET_FILE_ERROR	-5	File delete error
WIFIAPP_RET_DELETE_FAILED	-6	Delete fail
WIFIAPP_RET_MOVIE_FULL	-7	Storage full while recording
WIFIAPP_RET_MOVIE_WR_ERROR	-8	Write storage error while recording
WIFIAPP_RET_MOVIE_SLOW	-9	Slow card while recording
WIFIAPP_RET_BATTERY_LOW	-10	Battery low
WIFIAPP_RET_STORAGE_FULL	-11	Storage full
WIFIAPP_RET_FOLDER_FULL	-12	Folder full
WIFIAPP_RET_FAIL	-13	Execute error
WIFIAPP_RET_FW_WRITE_CHK_ERR	-14	Write FW checksum failed
WIFIAPP_RET_FW_READ2_ERR	-15	Read FW from NAND failed (for write checking)
WIFIAPP_RET_FW_WRITE_ERR	-16	Write FW to NAND error
WIFIAPP_RET_FW_READ_CHK_ERR	-17	Read FW checksum failed
WIFIAPP_RET_FW_READ_ERR	-18	FW doesn't exist or read error
WIFIAPP_RET_FW_INVALID_STG	-19	Invalid source storage
WIFIAPP_RET_FW_OFFSET	-20	Firmware update error code offset

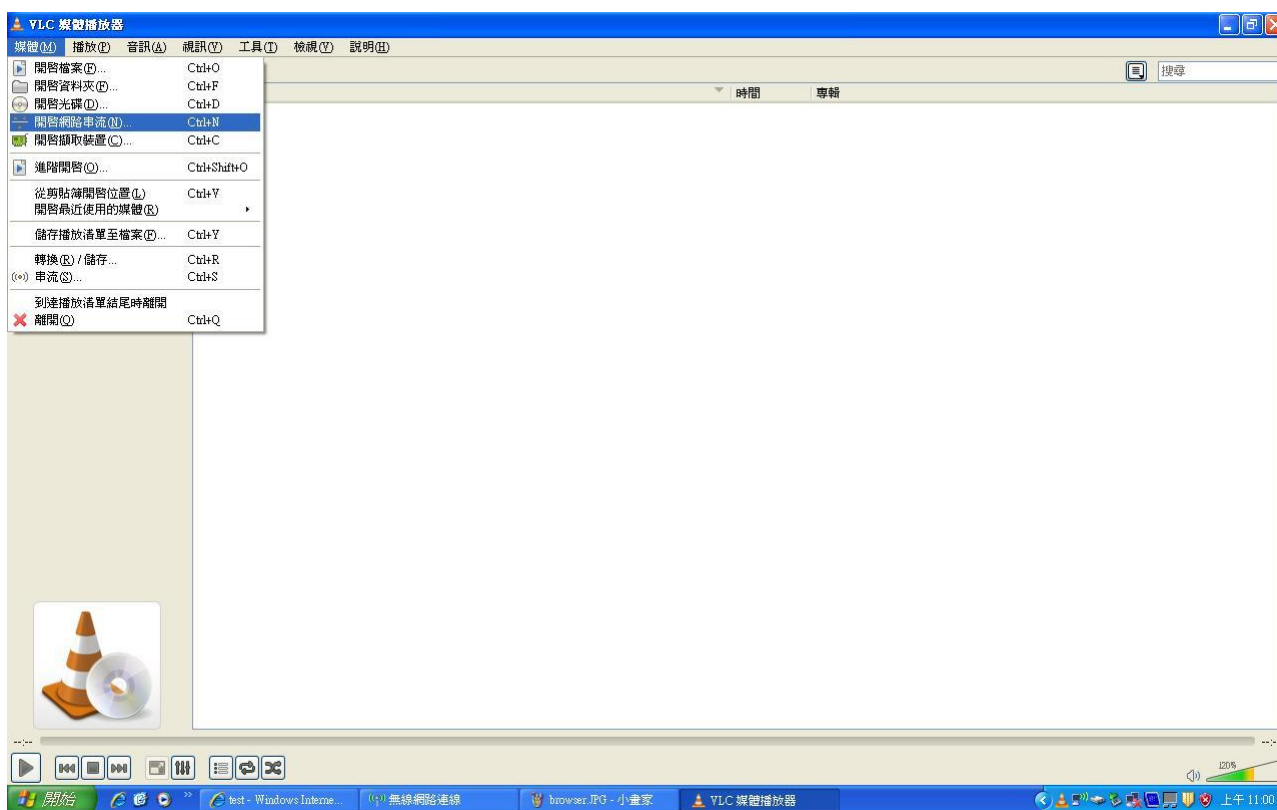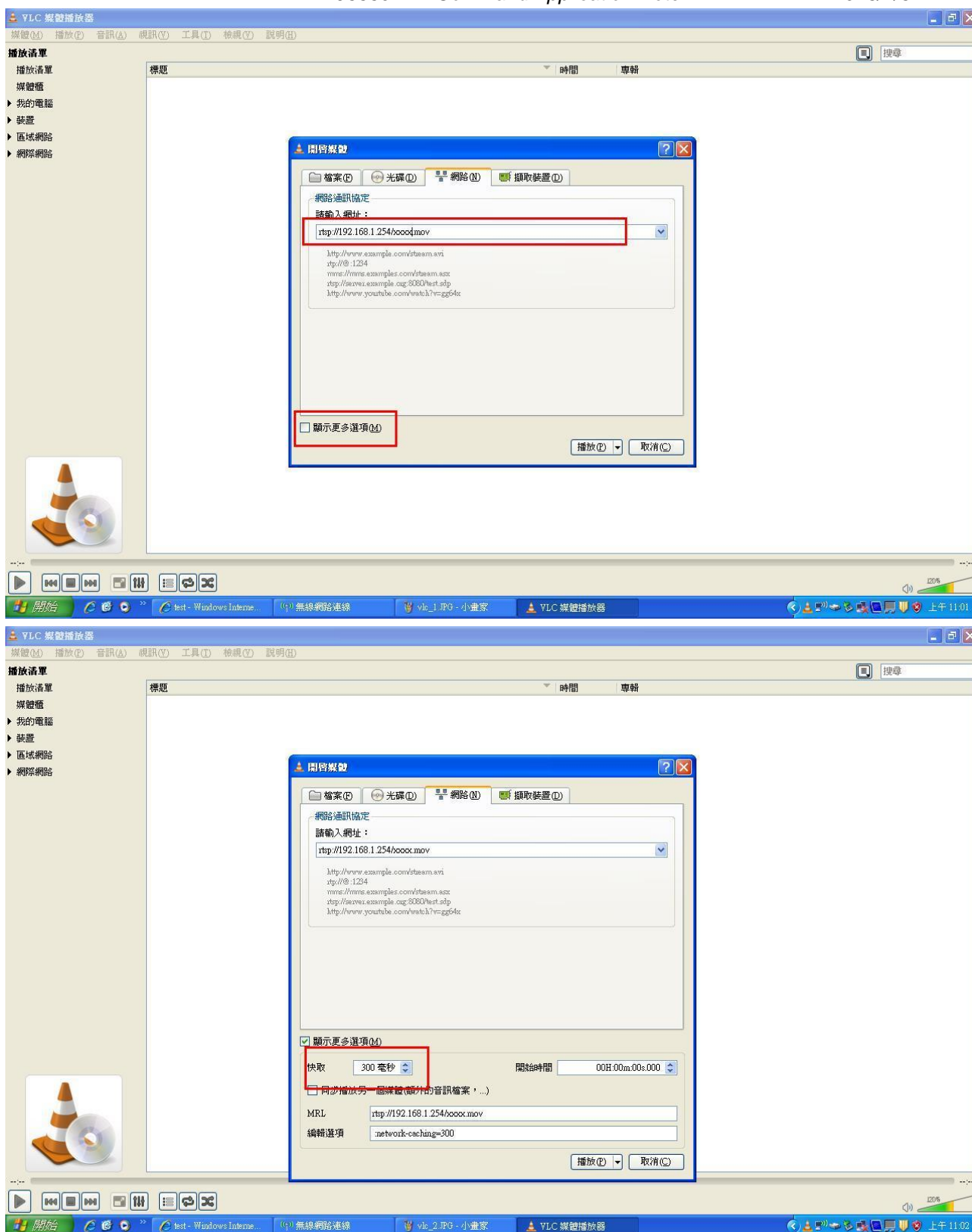| WIFIAPP_RET_PAR_ERR	-21	Command parameter error
WIFIAPP_RET_CMD_NOTFOUND	-256	Command not found

9 Demonstrations

9.1 App command

1. The user's cellphone or notebook connected to NT9666x. NT9666x default IP address is "192.168.1.254" in AP mode. If NT9666x is station mode, the next flow should replace IP address of NT9666x.
2. Start the browser (IE, Chrome …) of cellphone.
3. Input URL http://192.168.1.254/?custom=1 , the website would display current app commands.
4. User can click hyperlink to execute command, and get result on the website.
5. There should be a file "test.html" in the root directory of NT9666x SD card.
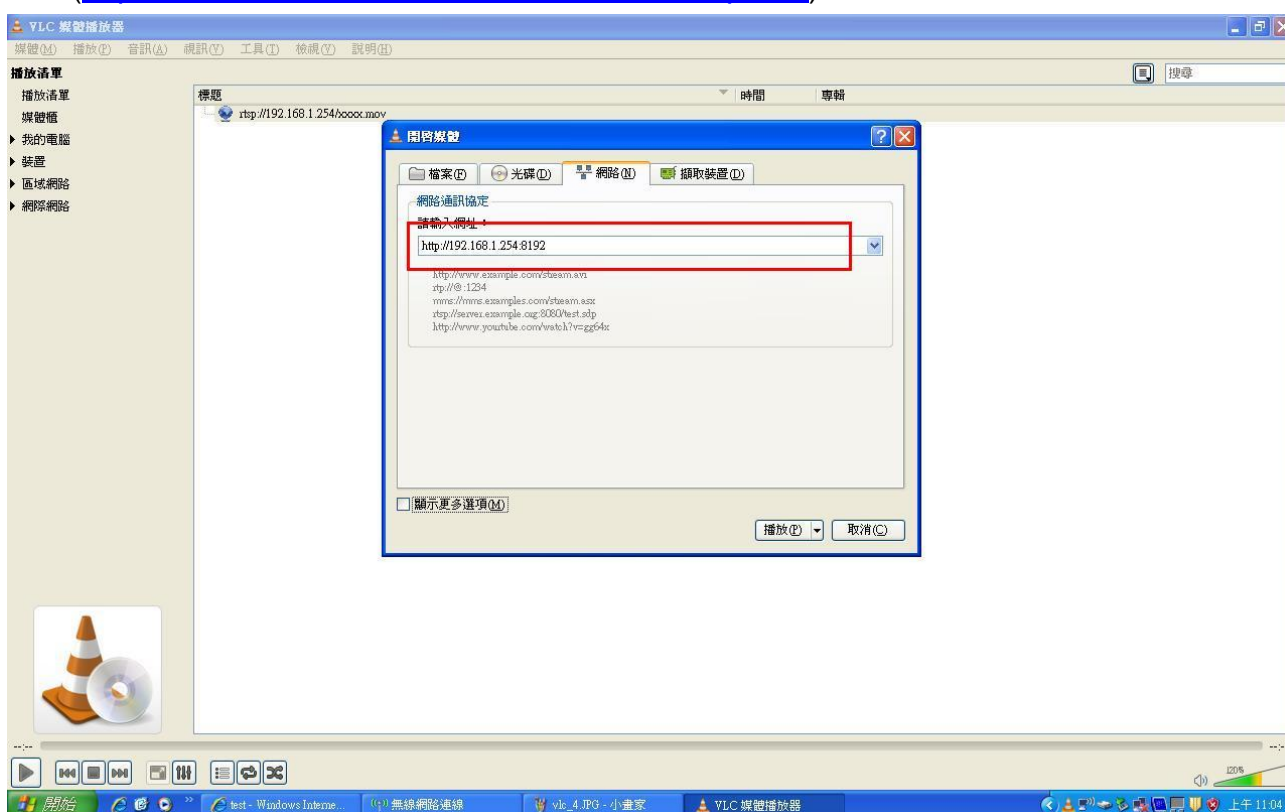
9.2   RTSP H264 streaming

1. Start VLC of cellphone or notebook.

2. Input URL rtsp://192.168.1.254/xxxx.mov or rtsp://192.168.1.254/xxxx.mp4

3. User can modify VLC cache time to reduce lag.

4. Make sure NT9666x is in movie mode (default is movie mode).

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9.3   HTTP MJPG streaming

1.   Start VLC of cellphone or notebook.

2.   Input URL http://192.168.1.254:8192

3.   User can modify VLC cache time to reduce lag.

4.   Make sure NT9666x is in photo mode. NT9666x default is movie mode. Use can change mode by app command hyperlink (http://192.168.1.254/?custom=1&cmd=3001&par=0).

9.4   HFS (HTTP File Server)

1.   Start the browser (IE, Chrome …) of cellphone.

2.   Input URL http://192.168.1.254

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