NT96650 Wi-Fi Command Application Note

Revision History

Revision	Date	Author	Changes
1.0	2014/05/21	Janice Huang	Create document and add first version description.
1.1	2014/05/28	Janice Huang	Add Wi-Fi movie mode state diagram.

Table of Content

1   Introduction

Wi-Fi commands is a HTTP protocol based command set which provides user to control 96650 Car DV while Wi-Fi on. User can use IE or smart phone application to execute those commands; Car DV receives those commands would return perform result. Please refer to wifi_test_flow.pdf 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 Car DV 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 and FTP at the same time. User should be careful about max file handle number. The max 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.

Car DV

Smart phone application

```
┌──────────────────────┐
│       Wi-Fi on       │
└──────────────────────┘
            │
            ▼
┌──────────────────────┐              ┌──────────────────────┐
│  Wait to be connected│              │   Search all Wi-Fi AP│
│ Show SSID and passphrase│           └──────────────────────┘
└──────────────────────┘                          │
            │                                      ▼
            ▼                  Authorized
┌──────────────────────┐◄─────────────┌──────────────────────┐
│      Connected       │              │    Connect to Car DV │
└──────────────────────┘              └──────────────────────┘
            │                                      │
            ▼                  Send command        ▼
┌──────────────────────┐◄─────────────┌──────────────────────┐
│     Wait command     │              │Application User Interface│
└──────────────────────┘              └──────────────────────┘
            │                  Return result       ▲
            ▼                                       │
┌──────────────────────┐──────────────────────────┘
│   Execute command    │
└──────────────────────┘
```

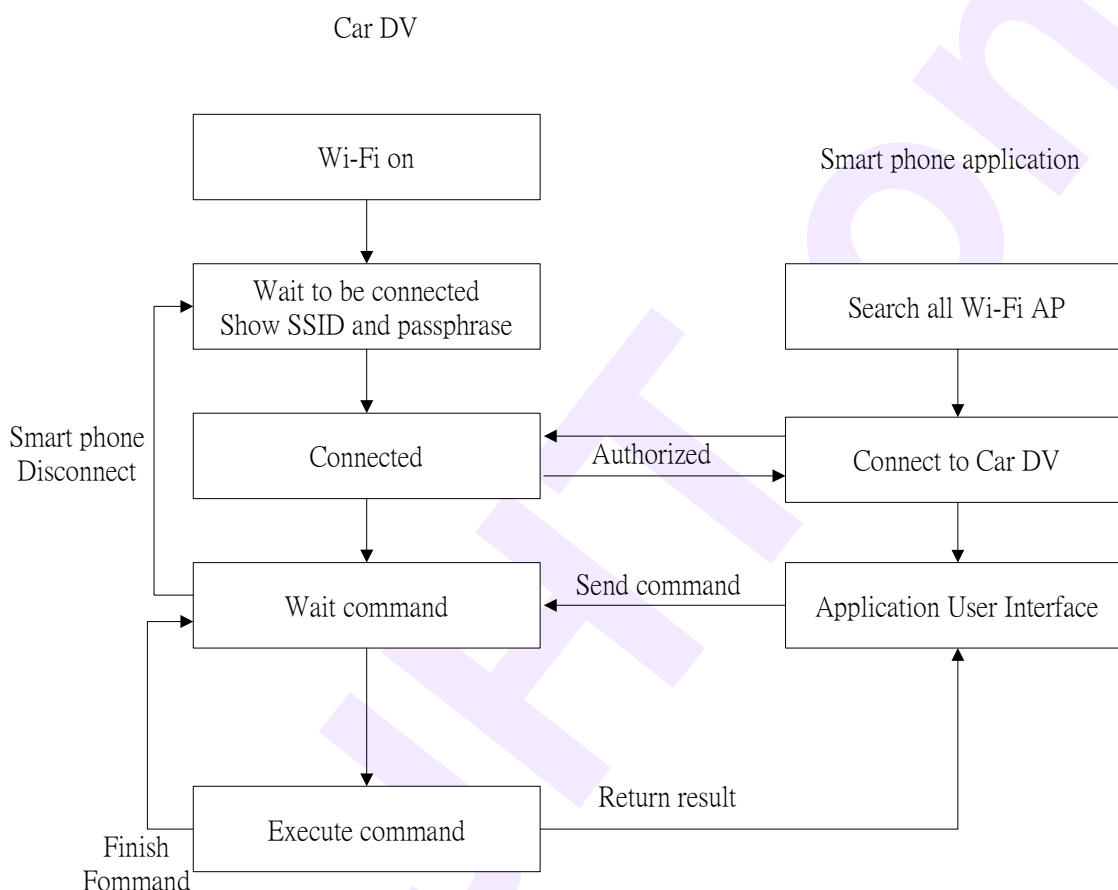Smart phone Disconnect

Finish Fommand

Figure 3.1 Wi-Fi Command operation flow.

Most car DV 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.
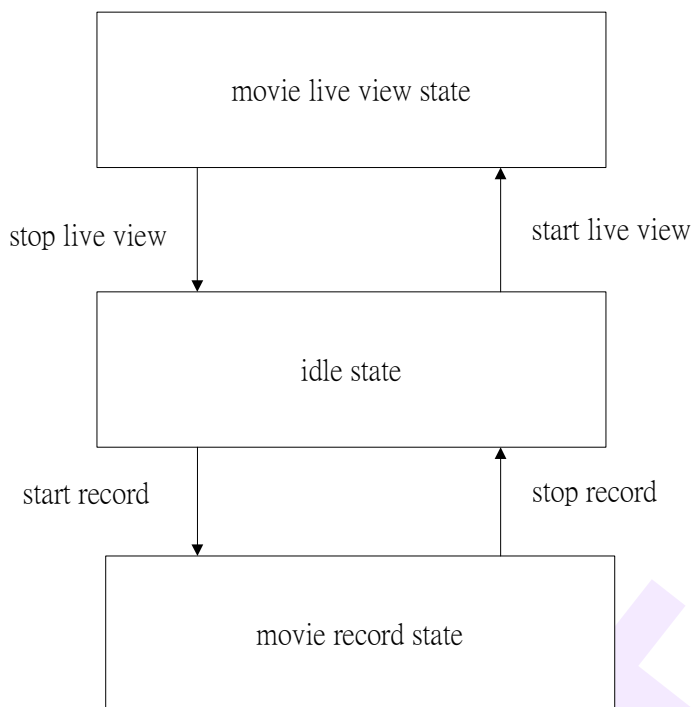
Figure 3.2 Wi-Fi movie mode state diagram

- Movie record start would from live view state change to record state through idle state.
- Movie record stop would from record state change to live view state through idle 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. Movie record start and stop command would pass through idle state; therefore 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
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
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

5　Usage

5.1　Photo mode

5.1.1　Capture

Start capture.

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

Parameter : Null

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 code

#define WIFIAPP_RET_FILE_ERROR	(-5)
#define WIFIAPP_RET_STORAGE_FULL	(-11)
#define WIFIAPP_RET_FOLDER_FULL	(-12)

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

```
enum _PHOTO_SIZE
{
PHOTO_SIZE_12M,
PHOTO_SIZE_10M,
PHOTO_SIZE_8M,
PHOTO_SIZE_5M,
PHOTO_SIZE_3M,
PHOTO_SIZE_2MHD,
PHOTO_SIZE_VGA,
PHOTO_SIZE_1M,
PHOTO_SIZE_ID_MAX,
};
```

Return :

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

- This command can execute in photo and movie mode
- 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

Return :

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>1003</Cmd>
```

```
<Status>0</Status>
<Value>378</Value>
</Function>
```

● 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

Return :

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

Error code

#define WIFIAPP_RET_MOVIE_FULL	(-7)
#define WIFIAPP_RET_MOVIE_WR_ERROR	(-8)
#define WIFIAPP_RET_MOVIE_SLOW	(-9)

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

● 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.

● User should check WIFIAPP_CMD_MAX_RECORD_TIME before start record.

● While recording, Car DV would notify error status if Car DV stops record by itself. Ex: card full, card error or slow card. Please refer to WIFIAPP_CMD_NOTIFY_STATUS command.

- Recording cannot do any menu setting.
- 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; current value as below

```
enum _MOVIE_SIZE
{
MOVIE_SIZE_1080P,     // 1920 x 1080
MOVIE_SIZE_720P,      // 1280 x 720
MOVIE_SIZE_WVGA,      // 854 x 480
MOVIE_SIZE_VGA,       // 640 x 480
MOVIE_SIZE_1440P,     // 1440 x 1080 with DAR.
};
```

Return :

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

- If movie live view size is 720p,the movie record max size is 1440P. 1080P cannot run at this setting. The Car DV cannot support live view 720p, and record 1080p at the same time. User should down one of them size
- 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

```
enum _MOVIE_CYCLICREC
```

```
{
MOVIE_CYCLICREC_OFF,
MOVIE_CYCLICREC_3MIN,
MOVIE_CYCLICREC_5MIN,
MOVIE_CYCLICREC_10MIN,
MOVIE_CYCLICREC_ID_MAX
};
```

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

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.

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

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

```
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,
};
```

Return :

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

● 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.

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

Parameter : 1 means on

           0 means off

Return :

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

</Function>

● This command would become effective while user start record by IFIAPP_CMD_RECORD

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

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

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

Return : Depend on current movie bitrate ,return max record time.

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

5.2.10 Movie live view size

Set movie live view size.

Command : http://192.168.1.254/?custom=1&cmd=2010&par=0

Parameter : live view size

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>2010</Cmd>
<Status>0</Status>
</Function>
```

- If movie live view size is 720p,the movie record max size is 1440P. 1080P cannot run at this setting. The Car DV cannot support live view 720p, and record 1080p at the same time. User should down one of them size

5.2.11 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

```
enum _GSENSOR
{
    GSENSOR_OFF = 0,
    GSENSOR_LOW,
    GSENSOR_MED,
    GSENSOR_HIGH,
```

```
    GSENSOR_ID_MAX,
};
```

Return :

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

5.2.12 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

Return :

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>2012</Cmd>
<Status>0</Status>
</Function>
```

5.2.13 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

Ex:

Return :

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

</Function>

- 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.
- 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

5.2.14 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
Ex:
Return :

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

- 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.
- 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

5.2.15 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

Return :

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

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

5.2.16 Movie recording time

Get movie recording time. The unit is second.

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

Parameter : Null

Return :

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

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

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

```
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;
```

Return :

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

- In Wi-Fi on photo mode, the system would start HTTP protocol and send motion JPG stream.
- In Wi-Fi on movie mode, the system would start RTSP protocol and send H264 stream.
- 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

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 Car DV 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.

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 Car DV 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.

Return :

```
<?xml version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3004</Cmd>
```

<Status>0</Status>

</Function>

5.3.5   Set date

Set Car DV 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

Return :

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

- <Function>

<Cmd>3005</Cmd>

<Status>0</Status>

</Function>

5.3.6   Set time

Set Car DV 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

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:

typedef enum

```
{
POWER_ON = 0,
POWER_3MIN,
POWER_5MIN,
POWER_10MIN,
POWEROFF_SETTING_MAX
}POWEROFF_SETTING;
```

Return :

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

5.3.8   Language

Select Car DV 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:

```
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,
};
```

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 car DV 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:

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

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 Car DV.

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

Parameter : 1 means format card

         0 means format nand/spi flash

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

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

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 name would be defined by project. Before update ,user should upload FW file to Car DV. If there is no firmware, Car DV would return error

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

Parameter : Null

Return :

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

Error code

#define WIFIAPP_RET_FW_WRITE_CHK_ERR	(-14)
#define WIFIAPP_RET_FW_READ2_ERR	(-15)
#define WIFIAPP_RET_FW_WRITE_ERR	(-16)
#define WIFIAPP_RET_FW_READ_CHK_ERR	(-17)
#define WIFIAPP_RET_FW_READ_ERR	(-18)
#define WIFIAPP_RET_FW_INVALID_STG	(-19)

● 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.

5.3.14 Query current status

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

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

Parameter : Null

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.

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

Parameter : Null

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>
```

- This command needs one file handle and temp buffer. Current Car DV support 4 file handle max, if user need operate files at the same time. This command would occupy one file handle until command finish.
- <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 Car DV if exist. If Car DV is alive would return result, otherwise it would not return.

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

Parameter : Null

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

Return :

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

● Free space would be 64 bytes 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=2001&par=1

Parameter : Null

Return :

No return Value. Wi-Fi restarts.
Car DV would be in wait to connect screen

● 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 Car DV charged, it would return charged.

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

Parameter : Null

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

```
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 Car DV 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 Car DV would notify 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 version="1.0" encoding="UTF-8" ?>
- <Function>
<Cmd>3020</Cmd>
<Status>-10</Status>
</Function>
```

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
Return :

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

5.4 Playback mode

5.4.1 Get thumbnail

Get photo or movie file thumb nail. Movie thumb nail 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

Parameter :

Return

The thumb nails data. There would be JPG data.

5.4.2   Get screen nail

Get photo or movie file screen nail. Movie screen nail 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

Return

The screen nails data. There would be JPG data.

5.4.3   Delete one file

Delete the specific file in Car DV

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

Return

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

Error code

#define WIFIAPP_RET_FILE_LOCKED	(-4)
#define WIFIAPP_RET_FILE_ERROR	(-5)
#define WIFIAPP_RET_DELETE_FAILED	(-6)

5.4.4   Delete all

Delete the all photo and movie files in Car DV

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

Parameter : Null

Return

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

6   Comment

- All setting command would not be kept if Car DV shutdown abnormally. User can save setting immediately by save menu information command manually. Otherwise those setting would be saved until Car DV power off correctly.
- The parameter of all commands might be changed by different projects. Those enumerations would be the same as Car DV 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.
- If user wants to download files by ftp or 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….
- 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=0 //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=0 //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=0 //start live view
```

Error code list

Error status	value	comments
WIFIAPP_RET_OK	0	Execute successful
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