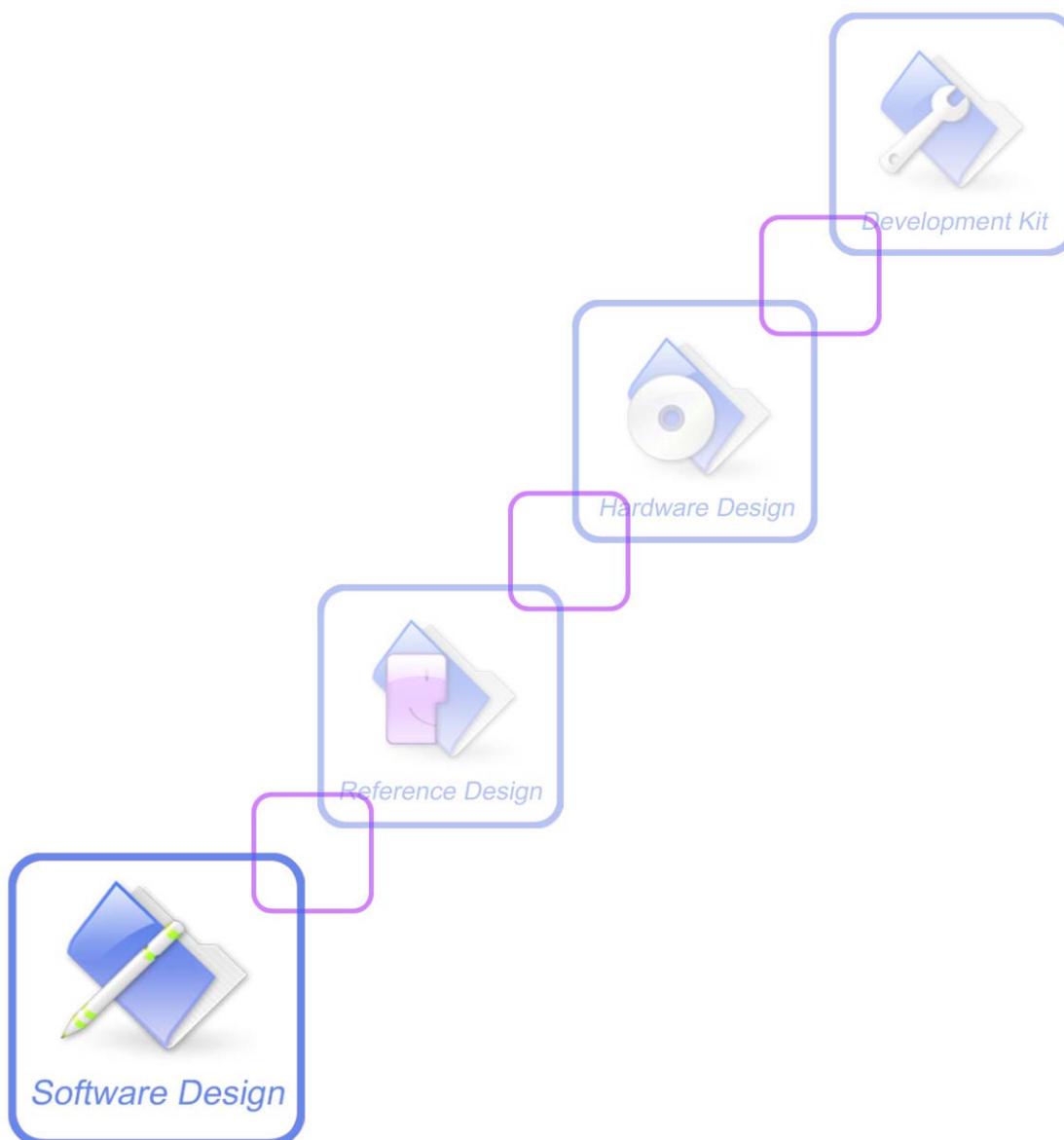




UMTS Video Call

Application Note



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Version History

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V1.00	New Version	

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1. Overview

The present document specifies a profile of UMTS Video Call application for SIM52xx series products, including general descriptions and recommended operation samples.

Please read this document completely before Video Call operation and refer to related documents for more information.

Video Call features:

- Base on 3G-324M over 64kbps bidirectional Circuit-Switched Data.
- H.245 Control Protocol for reliable transmission.
- Only support one Video Call.
- Support for AMR audio codec:
12.2kbps rate is transmitted, and all AMR rates can be received.
- Support for MPEG-4 video codec:
QCIF is the only size supported for TX and RX, and up to 15fps video transmission.
- DTMF (User Input Indication as string) in H.245 Control Protocol.
- Support for three video sources:
Live Camera
JPEG/BMP Image
Movie Clip
- Different audio input device in Video Call.
- Recording far-end and near-end video simultaneously in Video Call.
- Far-end video loop back function.
- Switch between general Video Call and 64kbps Circuit-Switched Data.
- Different video frame rates – High Quality or High Motion Profile.
- Video rotation (180 degrees) in Video Call.

- NOTE**
- 1.Video Call application is working in UMTS network.
 - 2.Camera is necessary for Video Call application (except 64kbps Circuit-Switched Data).
 - 3.Some products without general Video Call, may support 64kbps Circuit-Switched Data.
(Please refer to related documents for each product.)
 - 4.For USB Audio/Video, SIMCOM_WCDMA_Multimedia_EXT_V1.00.pdf or later version is available.

2. Call Commands

This section only lists Video Call related commands. Please refer to AT command document to get detailed descriptions.

AT+VPSOURCE

Select TX video source for Video Call, and it is only effective on current or next Video Call.

Three video sources are supported: Live Camera (default), JPEG/BMP Image, and Movie Clip.

NOTE Between URC “VPACCEPT” (or command +VPANSWER) and URC “VPCONNECTED”, this command can not be emitted.

AT+VPRECORD

Control if recording far-end and near-end RX video into MP4 files or not.

MP4 file name is generated automatically basing on Real Time Clock, so it is recommended that Real Time Clock is set correctly by command +CCLK after power on.

NOTE Between URC “VPACCEPT” (or command +VPANSWER) and URC “VPCONNECTED”, this command can not be emitted.

AT+VPMAKE

Originate a Video Call after TX source is selected.

If the command is processed successfully, URC “VPACCEPT” will be returned, and until URC “VPCONNECTED” TX video source can not be changed.

AT+VPANSWER

Answer an incoming Video Call after URC “VPINCOM” is reported regularly.

NOTE Between the first “VPINCOM” and this command, the host can select TX video source or if recording far-end and near-end video into MP4 files.

AT+VPEND

End the active Video Call, and stop recording RX video if that is ongoing.

In addition, this command can reject an incoming Video Call.

AT+VPDTMF

Send DTMF (User Input Indication) in active Video Call.

AT+VPLOOP

Loop back RX video frames to remote side in active Video Call.

It is recommended that command’s parameter is 8 or above, for the limited capability of UE.

Essentially, TX video source is Static Image when this application is active, and after cancel the application, TX video source will be switched to Live Camera.

AT+VPSM

Switch call mode between general Video Call and 64kbps Circuit-Switched Data.

In general Video Call mode, URC “VPINCOM” is present for an incoming Video Call, and commands +VPMAKE, +VPANSWER and +VPEND are available.

In 64kbps Circuit-Switched Data mode, command +VPMAKE is forbad. For an incoming call, URC “RING” is present, and commands ATA/ATH are available. After command ATA answers the incoming call, the series port will be switched to Data Mode, and data is sent to host. The host can use command +++ to switch the series port to Command Mode and then use command ATH to end the call. In this case, command ATO is forbad. For Circuit-Switched Data call origination, refer to commands ATD and +CBST.

The call mode can be switched only when Video Call application is in idle state.

AT+VPQLTY

Choose High Quality (5fps) or High Motion Profile (15fps) for Video Call.

This command can be used only when Video Call application is in idle state, and the setting is available until power off.

AT+CWIIC

Set video rotation in active Video Call.

AT+CWIIC=0x42,0x1E,0x07,1 – no change

AT+CWIIC=0x42,0x1E,0x1B,1 – mirror vertically

AT+CWIIC=0x42,0x1E,0x2B,1 – mirror horizontally

AT+CWIIC=0x42,0x1E,0x3B,1 – rotation with 180 degrees

NOTE 1.Video Call commands need that USIM card is present, and make sure UE is in UMTS network.
2.For commands +VPSOURCE, +VPRECORD and +VPLOOP, the values are default after URC “VPEND” is present. For commands +VPSM and +VPQLTY, the value are not changed until reboot or power off.

3. Call Result Codes

In this section, some Unsolicited Result Codes for Video Call are present. The host should process all these URCS correctly.

VPINCOM <number>

Indicate an incoming Video Call in general mode.

<number> is caller’s mobile number.

This indication will be present per six seconds until the call is answered or released. About automatic answering Video Call, refer to commands +AUTOANSWER and ATSO.

Command +CLCC can be used to get more information about the call.

VPACCEPT

Indicate that Video Call is in the process of being set up.

After this URC is present, commands +VPSOURCE and +VPRECORD are not available, until “VPCONNECTED” or “VPEND” are present.

VPRINGBACK

Indicate that remote side is located and ringing.

VPSETUP

Indicate that Video Call is set up end-to-end.

VPCONNECTED

Indicate that video protocols are set up and Video Call is connected. After this URC, the host can switch TX video source and start recording far-end and near-end video.

VPEND[: <seconds>]

Indicate that Video Call has ended.

<seconds> is the duration of Video Call, from “VPCONNECTED” to “VPEND” and the unit is in

second.

MISSED_VIDEO_CALL: <datetime>,<number>

Indicate that an incoming Video Call is missed, and UMTS network has released the call.

<datetime> denotes when this indication is present, and the format is YY/MM/DD,HH/MM/SS, where characters indicate year (two last digits), month, day, hour, minute, second.

<number> is caller's mobile number.

VPRXDTMF: <dtmf>

Indicate that a User Input is received from remote side.

<dtmf> is DTMFs (User Input Indication) with double quotes from remote side, which is sent as an H.245 User Input Indication message (base string) and consisted of (0-9, *, #).

4. Basic Operation Flow

4.1 Video Call Origination

COMMAND	DESCRIPTION
AT+FSCD	Select current directory if TX video source is JPEG/BMP Image or Movie Clip. If TX video source is Live Camera, skip this step.
AT+VPSOURCE	Select TX video source – Live Camera, JPEG/BMP Image and Movie Clip. If TX video source is Live Camera, this step can be skipped. JPEG/BMP Image or Movie Clip is in current directory.
AT+VPRECORD	Record TX/RX audio/video as MP4 files or not.
AT+VPMAKE	Originate new Video Call.
<i>VPCONNECTED</i>	URC indicates the Video Call is in active state.
AT+VPSOURCE	Switch video source in active Video Call.
AT+VPEND	Release the Video Call actively.
<i>VPEND</i>	URC indicates the Video Call is finished and in idle state.

4.2 Video Call Termination

COMMAND	DESCRIPTION
<i>VPINCOM</i>	URC indicates
AT+FSCD	Select current directory if TX video source is JPEG/BMP Image or Movie Clip. If TX video source is Live Camera, skip this step.
AT+VPSOURCE	Select TX video source – Live Camera, JPEG/BMP Image and Movie Clip. If TX video source is Live Camera, this step can be skipped. JPEG/BMP Image or Movie Clip is in current directory.
AT+VPRECORD	Record TX/RX audio/video as MP4 files or not.
AT+VPANSWER	Answer the incoming Video Call.
<i>VPCONNECTED</i>	URC indicates the Video Call is in active state.
AT+VPSOURCE	Switch video source in active Video Call.
<i>VPEND</i>	URC indicates the Video Call is released by remote side and in idle state.

5. Typical Samples

5.1 Call Origination With Live Camera

```
AT+VPSOURCE=1
OK
AT+VPMAKE=18602102222
VPACCEPT
OK
VPRINGBACK
VPSETUP
VPCONNECTED
AT+CLCC
+CLCC: 1,0,0,1,0,"18602102222",129
OK
AT+VPEND
OK
VPEND: 200
```

5.2 Call Origination With Static Image

```
AT+FSCD=C:/Picture
+FSCD: C:/Picture/
OK
AT+FSLs
+FSLs: FILES:
PIC_1.JPG
PIC_2.JPG
OK
AT+VPSOURCE=2,"PIC_1.JPG"
OK
AT+VPMAKE=18602102222
```

VPACCEPT

OK

VPRINGBACK

VPSETUP

VPCONNECTED

AT+CLCC

+CLCC: 1,0,0,1,0,"18602102222",129

OK

AT+VPEND

OK

VPEND: 200

5.3 Call Origination With Movie Clip

AT+FSCD=C:/Video

+FSCD: C:/Video/

OK

AT+FSLs

+FSLs: FILES:

MOVIE_1.MP4

MOVIE_2.MP4

OK

AT+VPSOURCE=3,"MOVIE_1.MP4"

OK

AT+VPMAKE=18602102222

VPACCEPT

OK

VPRINGBACK

VPSETUP

VPCONNECTED

AT+CLCC

+CLCC: 1,0,0,1,0,"18602102222",129

OK

AT+VPEND

OK

VPEND: 200

5.4 Call Origination With Video Recording

AT+FSCD=C:/VideoCall

+FSCD: C:/VideoCall/

OK

AT+FSLs

OK

AT+VPRECORD=3

OK

AT+VPMAKE=18602102222

VPACCEPT

OK

VPRINGBACK

VPSETUP

VPCONNECTED

AT+CLCC

+CLCC: 1,0,0,1,0,"18602102222",129

OK

AT+FSLs

+FSLs: FILES:

20100201_103026_f.mp4

20100201_103026_n.mp4

OK

AT+CCLK?

+CCLK: "10/02/01,10:35:52"

OK

AT+VPRECORD=0

OK

AT+VPEND

OK

VPEND: 200

5.5 Call Termination With Live Camera

VPINCOM 18602102222

VPINCOM 18602102222

AT+CLCC

+CLCC: 1,1,4,1,0,"18602102222",129

OK

AT+VPSOURCE=1

OK

AT+VPANSWER

OK

VPSETUP

VPCONNECTED

AT+CLCC

+CLCC: 1,1,0,1,0,"18602102222",129

OK

VPEND: 120

5.6 Call Termination With Static Image

VPINCOM 18602102222

VPINCOM 18602102222

```
AT+CLCC
+CLCC: 1,1,4,1,0,"18602102222",129

OK
AT+FSCD=C:/Picture
+FSCD: C:/Picture/

OK
AT+FSLs
+FSLs: FILES:
PIC_1.JPG
PIC_2.JPG

OK
AT+VPSOURCE=2,"PIC_1.JPG"
OK
AT+VPANSWER
OK

VPSETUP

VPCONNECTED
AT+CLCC
+CLCC: 1,1,0,1,0,"18602102222",129

OK

VPEND: 120
```

5.7 Call Termination With Movie Clip

```
VPINCOM 18602102222
VPINCOM 18602102222
AT+CLCC
+CLCC: 1,1,4,1,0,"18602102222",129

OK
AT+FSCD=C:/Video
+FSCD: C:/Video/
```

OK

AT+FSL

+FSL: FILES:
MOVIE_1.MP4
MOVIE_2.MP4

OK

AT+VPSOURCE=3,"MOVIE_1.MP4"

OK

AT+VPANSWER

OK

VPSETUP

VPCONNECTED

AT+CLCC

+CLCC: 1,1,0,1,0,"1860210222",129

OK

VPEND: 120

5.8 Call Termination With Video Recording

VPINCOM 1860210222

VPINCOM 1860210222

AT+CLCC

+CLCC: 1,1,4,1,0,"1860210222",129

OK

AT+FSCD=C:/VideoCall

+FSCD: C:/VideoCall/

OK

AT+FSL

OK

AT+VPRECORD=3

OK

AT+VPANSWER

OK

VPSETUP

VPCONNECTED

AT+CLCC

+CLCC: 1,1,0,1,0,"18602102222",129

OK

AT+FSLs

+FSLs: FILES:

20100201_111216_f.mp4

20100201_111216_n.mp4

OK

AT+CCLK?

+CCLK: "10/02/01,11:18:20"

OK

AT+VPRECORD=0

OK

VPEND: 120

5.9 Switch Video Source In Active Call

AT+VPSOURCE=1

OK

AT+VPMAKE=18602102222

VPACCEPT

OK

VPRINGBACK

VPSETUP

VPCONNECTED

AT+CLCC
+CLCC: 1,0,0,1,0,"18602102222",129
OK
AT+FSCD=C:/Picture
+FSCD: C:/Picture/
OK
AT+FSLs
+FSLs: FILES: PIC_1.JPG PIC_2.JPG
OK
AT+VPSOURCE=2,"PIC_1.JPG"
OK
AT+FSCD=C:/Video
+FSCD: C:/Video/
OK
AT+FSLs
+FSLs: FILES: MOVIE_1.MP4 MOVIE_2.MP4
OK
AT+VPSOURCE=3,"MOVIE_1.MP4"
OK
AT+VPSOURCE=1
OK
AT+VPEND
OK
VPEND: 200

5.10 Video Recording In Active Call

AT+FSCD=C:/VideoCall
+FSCD: C:/VideoCall/

OK

AT+FSLs

OK

AT+VPCORD=0

OK

AT+VPMAKE=18602102222

VPACCEPT

OK

VPRINGBACK

VPSETUP

VPCONNECTED

AT+CLCC

+CLCC: 1,0,0,1,0," 18602102222",129

OK

AT+VPCORD=1

OK

AT+FSLs

20100201_131646_f.mp4

OK

AT+VPCORD=0

OK

AT+VPCORD=2

OK

AT+FSLs

+FSLs: FILES:
20100201_131646_f.mp4
20100201_131858_n.mp4

OK

AT+VPCORD=0

OK

AT+VPCORD=3

```
OK
AT+FSLs
+FSLs: FILES:
20100201_131646_f.mp4
20100201_131858_n.mp4
20100201_132208_f.mp4
20100201_132208_n.mp4

OK
AT+VPRECORD=0
OK
AT+VPEND
OK
VPEND: 520
```

5.11 DTMFs In Active Call

```
AT+VPSOURCE=1
OK
AT+VPRECORD=0
OK
AT+VPMAKE=18602102222
VPACCEPT
OK
VPRINGBACK
VPSETUP
VPCONNECTED
AT+VPDTMF="1"
OK
+VPRXDTMF: 1
AT+VPDTMF="*"
OK
```

```
+VPRXDTMF: *  
AT+VPDTMF="1234"  
OK  
  
+VPRXDTMF: 1234  
AT+VPEND  
OK  
  
VPEND: 120
```

5.12 Loop Back Far-end Video In Active Call

```
AT+VPSOURCE=1  
OK  
AT+VPRECORD=0  
OK  
AT+VPMAKE=18602102222  
VPACCEPT  
  
OK  
  
VPRINGBACK  
  
VPSETUP  
  
VPCONNECTED  
AT+VPLOOP=8  
+VPLOOP: 8  
  
OK  
AT+VPLOOP=255  
OK  
AT+VPLOOP=12  
+VPLOOP: 12  
  
OK  
AT+VPLOOP?  
+VPLOOP: 12
```

```
OK
AT+VPEND
OK
VPEND: 360
AT+VPLOOP?
+VPLOOP: 255
OK
```

5.13 64kbps Circuit-Switched Data

```
AT+VPSM=1
+VPSM: 1
OK
RING
RING
AT+CLCC
+CLCC: 1,1,4,1,0,"18602102222",128
OK
ATH
OK
RING
RING
AT+CLCC
+CLCC: 1,1,4,1,0,"18602102222",128
OK
ATA
CONNECT 115200
... ..
+++
OK
... ..
```

```
ATH
OK
AT+VPSM=1
+VPSM: 1
OK
AT+CBST=134,1,0
OK
ATD18602102222
BUSY
ATD18602102222
CONNECT 115200
... ..
NO CARRIER
```

5.14 Video Quality And Motion Profile

```
AT+VPSOURCE=1
OK
AT+VPQLTY=15
OK
AT+VPMAKE=18602102222
VPACCEPT
OK
VPRINGBACK
VPSETUP
VPCONNECTED
AT+CLCC
+CLCC: 1,0,0,1,0,"18602102222",129
OK
AT+VPEND
```

```
OK
VPEND: 200
AT+VPQLTY=5
OK
AT+VPMAKE=18602102222
VPACCEPT
OK
VPRINGBACK
VPSETUP
VPCONNECTED
AT+CLCC
+CLCC: 1,0,0,1,0,"18602102222",129
OK
AT+VPEND
OK
VPEND: 180
```

5.15 Video Mirror And Rotation

```
AT+VPSOURCE=1
OK
AT+VPMAKE=18602102222
VPACCEPT
OK
VPRINGBACK
VPSETUP
```

```
VPCONNECTED
AT+CLCC
+CLCC: 1,0,0,1,0,"18602102222",129
OK
AT+CWIIC=0x42,0x1E,0x1B,1
OK
AT+CWIIC=0x42,0x1E,0x07,1
OK
AT+CWIIC=0x42,0x1E,0x2B,1
OK
AT+CWIIC=0x42,0x1E,0x07,1
OK
AT+CWIIC=0x42,0x1E,0x3B,1
OK
AT+CWIIC=0x42,0x1E,0x07,1
OK
AT+VPEND
OK
VPEND: 160
```

6. Conflict AT Commands

Following AT commands cannot be used with VideoCall AT commands together:

- ATD for Voice Call
- Camera AT commands

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