



IVT BlueSoleil™ Software Development Kit

Sample Instruction

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Version History

Version	Modification	Author	Date
1.0	Initial	Xingyang	2009-6-3
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1. Overview

The BlueSoleil™ SDK sample application stimulates a sample Bluetooth manager which demonstrates basic standard Bluetooth operations, including managing local device managing remote device and making use of profile.

2. SDK File Components

- The folder 'exe' contains relevant binary files which are necessary when running the Bluetooth application. Note: all binary files are built for ARM platform. If your device hardware parameters are different from the setting in configuration file btctl.ini, please modify btctl.ini according to your platform's setting. You can place 'exe' folder in any directory of your device.
- The folder 'SDK sample' contains source files of SDK sample application and SDK develop kit under path '....\SDK Sample\CESDK'.

3. Program Running Environment

Windows CE BlueSoleil 3.0 version 1.1 or later is required to be run in Win CE5.0 or 6.0 platform.

4. Building the Sample Application

1. Open BSSample70.sln solution file which is located in the directory '....\SDK Sample\' with Microsoft Visual 2005;
2. Build application with right configuration;
3. Copy 'exe' folder to any directory of your device;
4. Run this application in your device (Note: must run BSServer.exe firstly and then BSSample.exe);
5. Follow the command line information to manipulate the demo program.

5. Sample Application for Multi-clients

1. Open BSSample70.sln Solution file which is located in the directory '.... \SDK Sample\' with Microsoft Visual 2005.
2. Find StartBSServer() function in file SDK_tst.c, and then change MiddleWanrInit() function to MiddleWanrInitWithClientID(SECOND_CLIENT_ID) .

3. Build application, and then change the name of output BSSample.exe to BSSample2.exe.
4. Copy BSSample2.exe to 'exe' folder.
5. Run application in your device (Note: must run BSServer.exe firstly, and then run BSSample.exe and BSSample2.exe).
6. Follow the command line information to manipulate the demo program.

6. Functional Description

6.1 Main Manager Window

After BlueSoleil has been successfully initialized, the main window will show up.

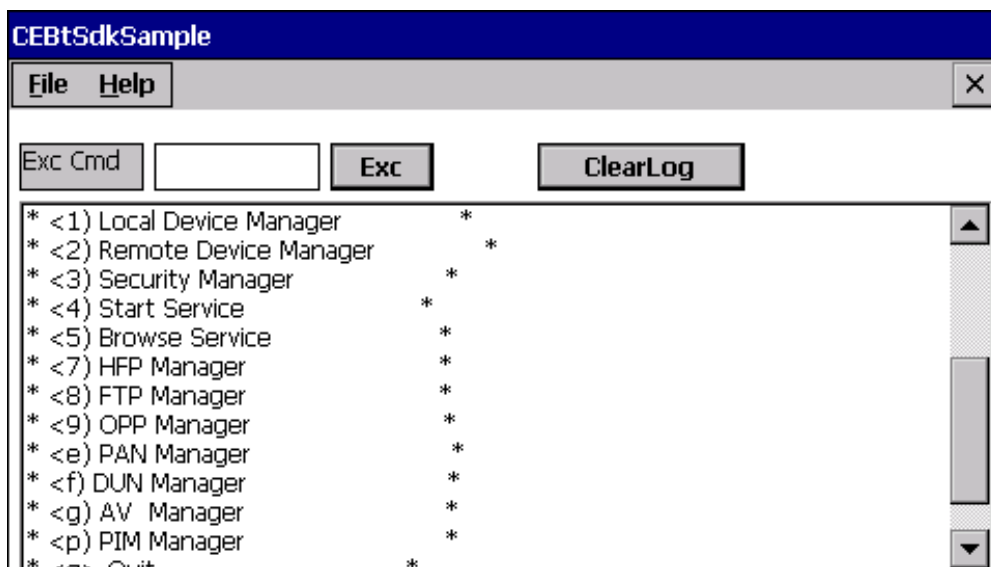


Figure1 BlueSoleil Main Window

1. Select '<1> Local Device Manager' to manage local device.
2. Select '<2> Remote Device Manager' to search and manage remote device.
3. Select '<3> Security Manager' to change security mode of local device.
4. Select '<4> Start Service' to start specific service of local device.
5. Select '<5> Browse Service' to search service of remote device.
6. Select '<7> HFP Manager' to use HFP profile.
7. Select '<8> FTP Manager' to use FTP profile.
8. Select '<9> OPP Manager' to use OPP profile.
9. Select '<e> PAN Manager' to use PAN profile.
10. Select '<f> DUN Manager' to use DUN profile.
11. Select '<g> AV Manager' to use A2DP/AVCRP profile.
12. Select '<p>PIM Manager' to use PIM manager.

Relevant files: sdk_tst.c

6.2 Local Device Manager

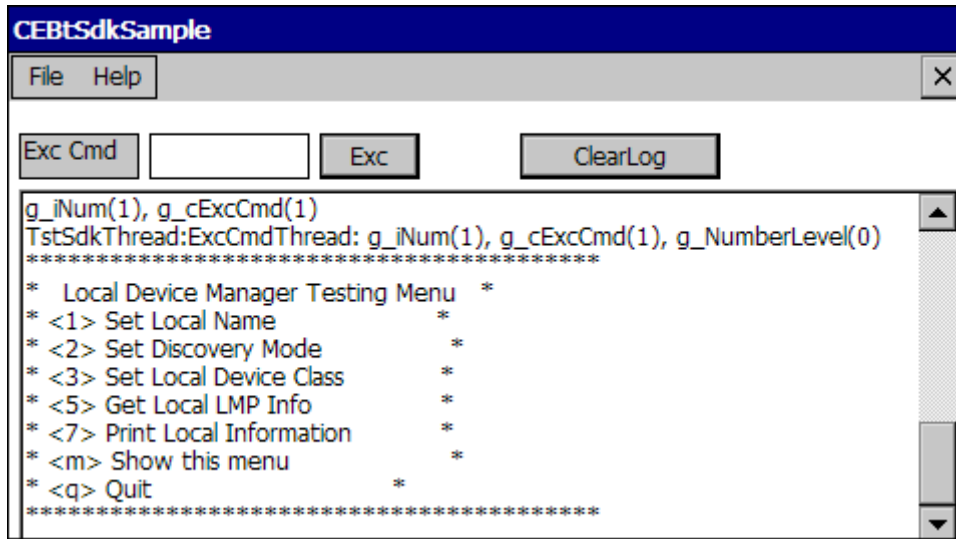


Figure2 Local Device Manager

1. Select '<1> Set Local Name' to set user friendly name of the local device.
2. Select '<2> Set Discovery Mode' to set accessibility modes of the local device. Three modes: connectable, discoverable or can be paired.
3. Select '<3> Set Local device class' to set the class of device/service field of the local device. For more information about device class refer to Chapter 5.2.3 'Class of Device/Service Field' of SDK user manual. In this sample, device class can be set to desktop PC or laptop.
4. Select '<5> Get LMP Info' to get LMP (Link Management Protocol) information of the connected Bluetooth device.
5. Select '<7> Print Local Information' to get property information of local device including device name, device address, device class and discovery mode.

Relevant files: loc_dev_tst.c

6.3 Remote Device Manager

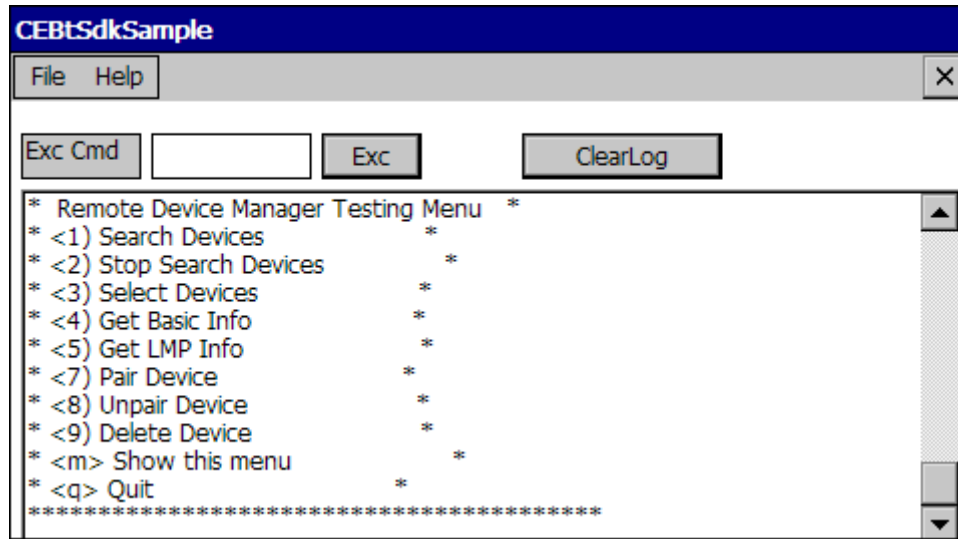


Figure3 Remote Device Manager

1. Select '<1> Search Device' to search nearby remote Bluetooth devices.
2. Select '<2> Stop Search Device' to stop the ongoing discovery procedure.
3. Select '<3> Select Device' to select a remote device and record its device handle for further operation.
4. Select '<4> Get Basic Info' to get information of local device including device name, device address, device class and discovery mode.
5. Select '<5> Get LMP Info' to get LMP (Link Management Protocol) information about local Bluetooth device.
6. Select '<7> Pair Device' to pair with the selected device. The default PIN code is "0000".
7. Select '<8> Un-pair Device' to Un-pair with the selected device. This will remove the link key and the 'Paired' flag of the specified device from historical record.
8. Select '<9> Delete Device' to delete the selected device. This will remove the selected device record from historical record.

Relevant files: `rmt_dev_tst.c`

Note: The operations listed above should be completed step by step in order to make sure the continuity in function calling.

6.4 Security Manager

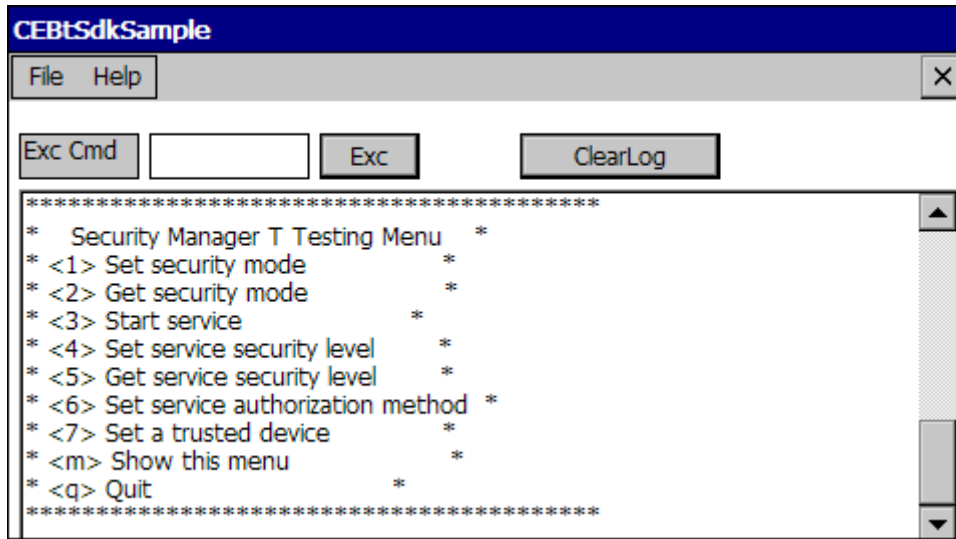


Figure4 Security Manager

1. Select '<1> Set security mode' to set security mode of local device.
2. Select '<2> Get security mode' to get security mode of local device.
3. Select '<3> Start service' to start SPP service with the security mode set above.
4. Select '<4> Set service security level' to set security level of a service record.
5. Select '<5> Get service security level' to get security level of a service record.
6. Select '<6> Set service authorization method' to set the authorization method of the service record. The authorization method specifies how local device processes authorization request for an untrusted device
7. Select '<7> Set a trusted device' to make the paired remote device as trusted device.

Relevant files: sec_tst.c

6.5 Start Service

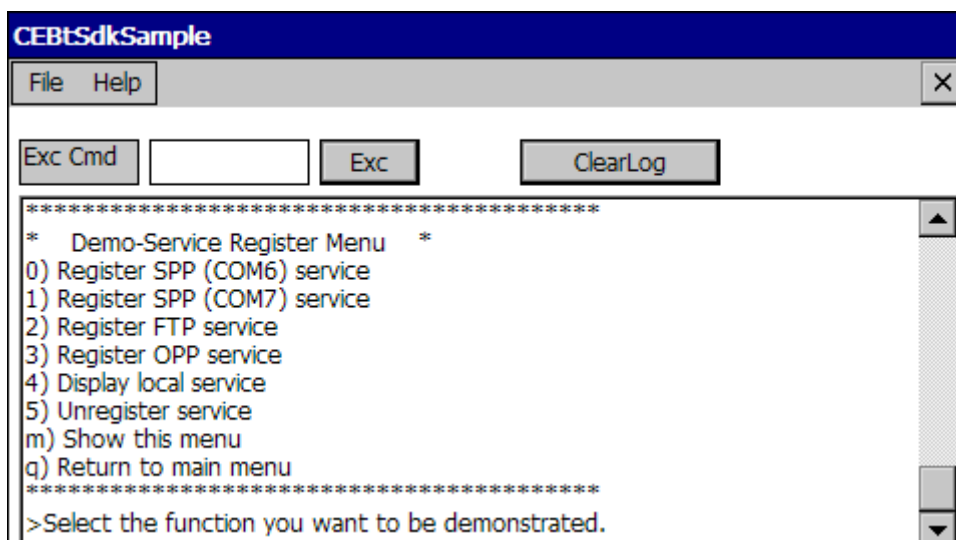


Figure5 Start Service

1. Select '<0> Register SPP (COM6) service' to register SPP service in local device with COM 6 port.
2. Select '<1> Register SPP (COM7) service' to register SPP service in local device with COM 7 port.
3. Select '<2> Register FTP service' to register FTP service in local device.
4. Select '<3> Register OPP service' to register OPP service in local device.
5. Select '<4> Display local service' to display all local services.
6. Select '<5> Unregister service' to unregister a local service.

Relevant files: svc_reg_tst.c

6.6 Browse Service

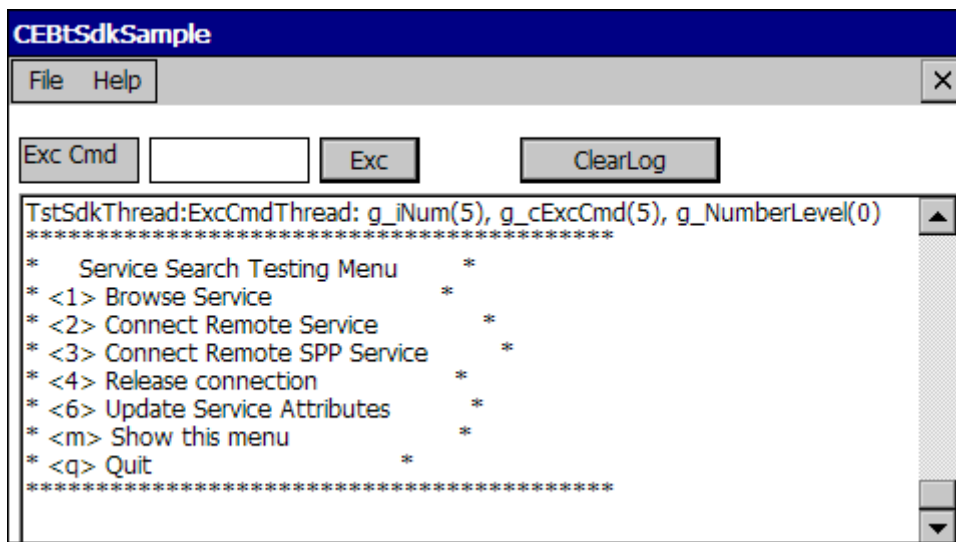


Figure6 Browse Service

1. Select '<1> Browse Service' to browse remote device's service.
2. Select '<2> Connect Remote Service' to connect a specific service of the remote device.
3. Select '<3> Connect Remote SPP Service' to connect the SPP services of the remote device
4. Select '<4> Release connection' to disconnect a specific Bluetooth connection.
5. Select '<6> Update Service Attributes' to update a specific service attribution of the remote device.

Relevant files: svc_reg_tst.c

6.7 Profile Manager

6.7.1 AVRCP & A2DP Profile

Test of this profile demonstrates the connection operation between local device and remote audio sink. Before connecting with remote audio sink (Typical device: headset or PC), make sure select remote device and its A2DP&AVRCP service following previous steps mentioned above.

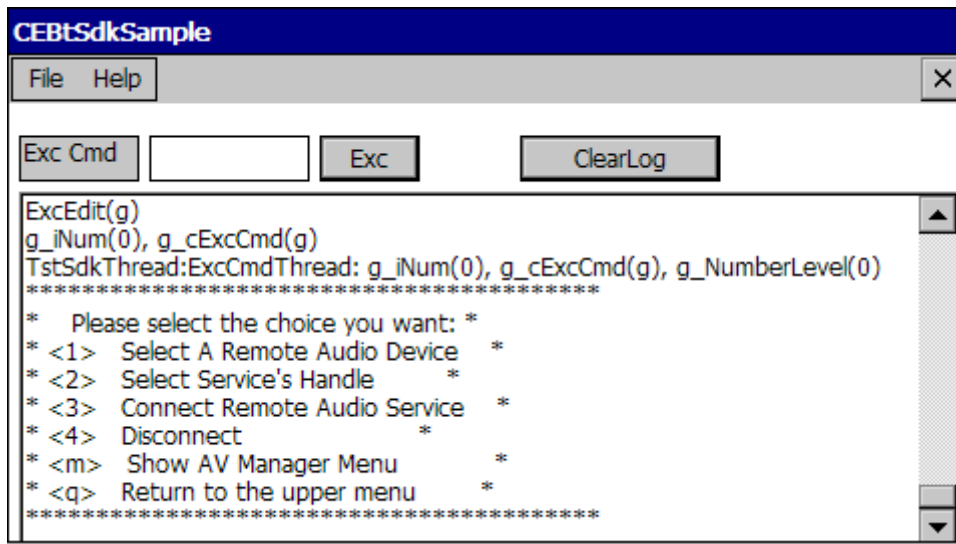


Figure7 Testing AVRCP & A2DP Profile

1. Select '<1> Select A Remote Audio Device'. The devices searched before will be displayed. If there is no device available, start searching devices procedure once again by following the operation instructions in the program. Then select the expected remote device with audio sink.
2. Select '<2> Select Service's Handle' and choose the 'Bluetooth Audio Sink' service.
3. Select '<3> Connect Remote Audio Service' and confirm PIN code if needed. After that the physical audio card will be switched to Bluetooth AV card automatically by BlueSoleil. A2DP and AVRCP connection is established after finish the previous step. Now you can play music or some other audio files on local device (audio source), and receive sounds on remote device (audio sink). You can also control the local playing track, e.g. pause, stop and/or volume control, by manipulating functional buttons of remote device.
4. Select '<4> Disconnect' to disconnect with remote service.

Note: The operations listed above should be completed step by step in order to make sure the continuity in function calling.

Relevant files: av_tst.c

6.7.2 FTP Profile

Test of this profile demonstrates a series of File Transfer Profile operations between local and remote device. Before starting FTP operations, make sure select remote device and its FTP service following previous steps mentioned above.

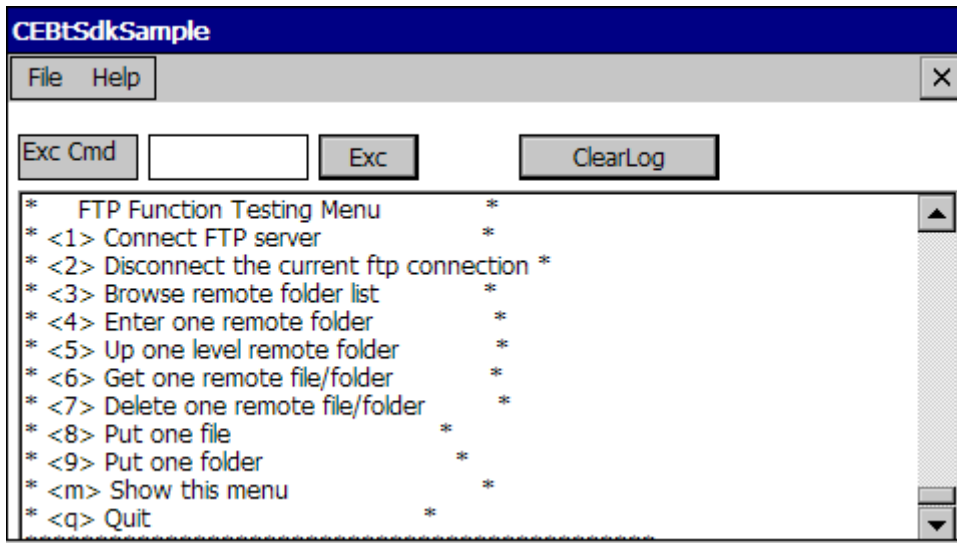
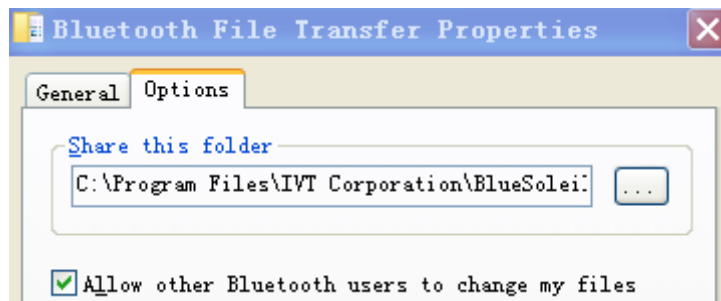


Figure8 FTP Function Testing Menu

1. Select '<1> Connect FTP server'. The devices searched before will be displayed. If there is no device available, start searching devices procedure once again by following the operation instructions in the program. Then select a remote device to connect its FTP server.
2. Select 'Bluetooth File Transfer' on service list. After confirming PIN code you will enter FTP Function Testing Menu.
3. For the sake of doing local FTP operations, remote FTP server property is required to be set correctly. Start BlueSoleil in Classic View on remote device. Then access Bluetooth→My Device Properties→Services→Bluetooth File Transfer→Properties→Options. Set the sharing folder directory and check the box before 'Allow other Bluetooth users to change my files' as the figure shown below.



4. Get shared remote directory and set it. This operation gets remote root directory and sets other working folders. The remote root directory which you have set in the previous step will be shown after slash sign '\ ' as a relative path on local device. The new working folder will be created under the root directory.

5. Select '<3> Browse remote folder list' to browse the content of current working folder of remote server.
6. Select '<4> Enter one remote folder' to enter a sub-folder of current working folder and browse the content.
7. Select '<6> Get one remote file/folder' to get a file/folder from current working directory of remote server and then save it to local directory, of which the full path is required to be specified.
8. Select '<7> Delete one remote file/folder' to delete a file/folder from the current working directory of remote server.
9. Select '<8> Put one file' or '<9> put one folder' to put a file/folder to current working directory of remote server. Full path is required when inputting the directory of local file/folder.
10. Select 'Return to upper working directory or root directory' to return to upper directory of current working directory of remote server, or directly return to remote root directory.

Note: files/folders with some special characters (e.g. "space") may not be supported to be transferred in this FTP sample.

Relevant files: ftpopp_tst.c

6.7.3 OPP Profile

Test of this profile demonstrates a series of Object Push Profile operations between local and remote device. Before starting OPP operations, make sure select remote device and its OPP service following previous steps mentioned above.

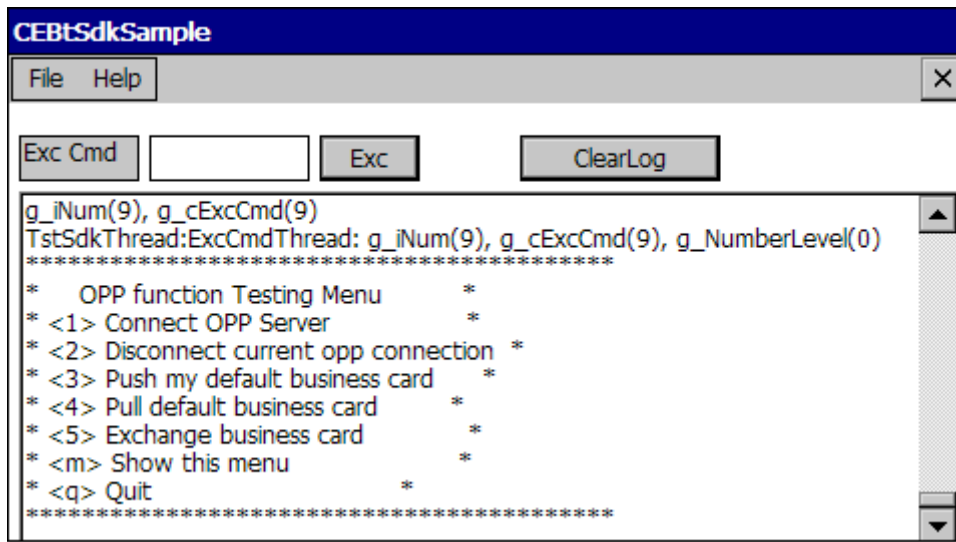
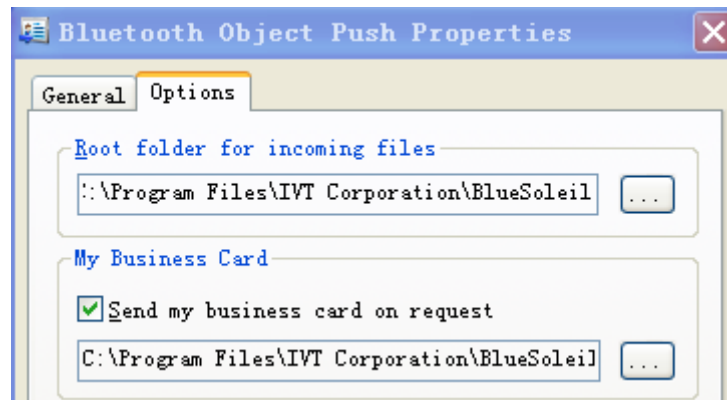


Figure9 OPP Function Testing Menu

1. Select '<1> Connect OPP server' . The devices searched before will be displayed. If there is no device available, start searching devices procedure once again by following the operation instructions in the program.
2. Select a remote device with OPP service.
3. Select 'Bluetooth Object Push' on service list. After confirming pin code you will enter OPP Function Testing Menu.
4. For the sake of doing local OPP operations, remote OPP server property is required to be set correctly. Start BlueSoleil in Classic View on remote device and then access Bluetooth→My Device Properties→Services→Bluetooth Object Push→Properties→Options. Specify the root folder for incoming files and also set a business card (*.vcf) as default outgoing vcf card of remote server, just as the figure shown below.



5. Select '<2>Push my default business card' then the program will automatically create two directories as follows on local client when executing the card pushing, card pulling or card exchanging operation.
 Inbox: C:\Bluetooth\Inbox
 Outbox: C:\Bluetooth\Outbox
 Manually create a business card file *Alvin.vcf* in the 'Outbox' folder as default outgoing business card. By entering '<1> Push my default business card', the card file 'Alvin.vcf' will be pushed to the folder of remote server, which you have set in the previous step.
6. Select '<4> Pull default business card' to pull the default outgoing card from remote server, which you have set in Step 4, and the card will be save to the Inbox folder of local client.
7. Select '<5> Exchange business card' to exchange the card *Alvin.vcf* of local client with default outgoing card of remote server. The exchanged cards are respectively saved to the default directories mentioned above.

Note: A business card got from remote server (either pulled or exchanged) is automatically saved as *remote.vcf* on local device.

Relevant files: ftpopp_tst.c

6.7.4 PAN Profile

Test of this profile demonstrates the connection operation between local device and remote PAN server. Before connect with remote PAN service, make sure select remote device and its GN service following previous steps mentioned above.

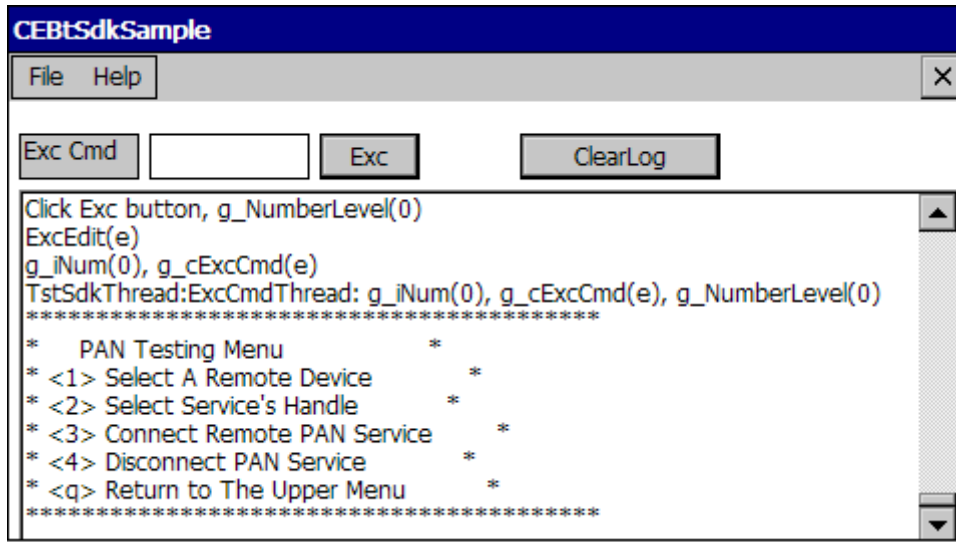


Figure10 Testing PAN Profile

1. Select '<1> Select A Remote Device'. The devices searched before will be displayed. If there is no device available, start searching devices procedure once again by following the operation instructions in the program. Select a remote device with PAN service.
2. Select '<2> Select Service's Handle' and choose 'Bluetooth GN Server'.
3. Select '<3> Connect Remote PAN Service' and confirm PIN code if needed.
The PAN connection is established after the previous step. Now you can do some PAN operations between local and remote device, i.e. LAN accessing through remote PC, remote desktop controlling, etc.
4. Select '<4> Disconnect PAN Service' to disconnect PAN connection with remote service.

Note: The operations listed above should be completed step by step in order because of the continuity in function calling.

Relevant files: pan_tst.c

6.7.5 HFP/HSP Profile

For testing this profile, the local device class switches to hands-free device (0x240404), which will connect with remote audio gateway device (Typical device: a mobile phone). To test this sample, it requests two communication terminals, one is mobile phone (Phone A) as audio gateway and another is phone (Phone B) as

remote communication terminal. Before connecting with remote HFP/HSP audio gateway, make sure select remote device and its audio gateway service following previous steps mentioned above.

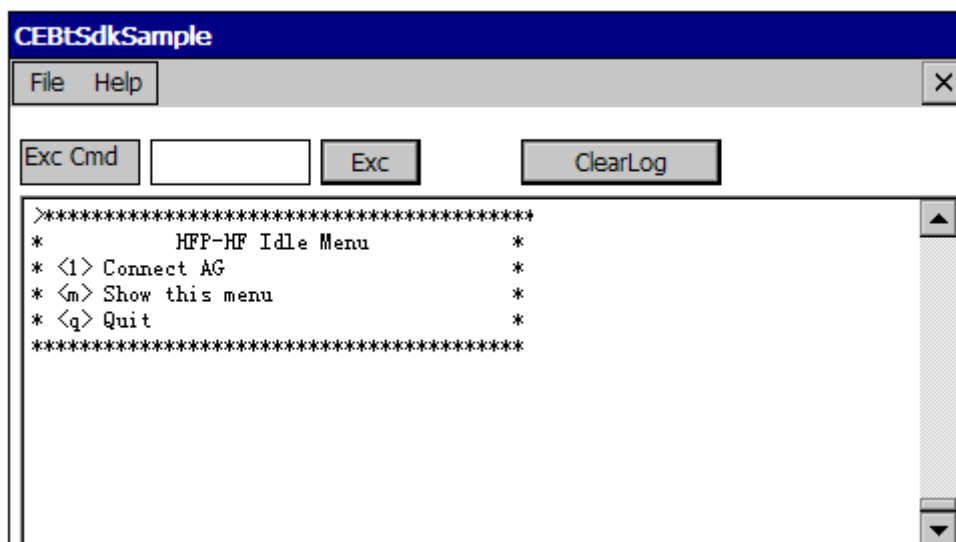


Figure11 Testing HFP/HSP Profile

1. Then select '<1> Connect AG'. The devices searched before will be displayed. If there is no device available, start searching devices procedure once again by following the operation instructions in the program.
2. Select Phone A as remote audio gateway.
3. Hands-free connection between local device and Phone A is established after finish the previous step.

Note: In this sample local device class is required to be switched to hands-free device (0x240404) through either local device manager of SDK sample or BlueSoleil configuration.

After the local device is connected with a remote Audio-Gateway (AG), the 'Standby Menu' will show up as figure below.

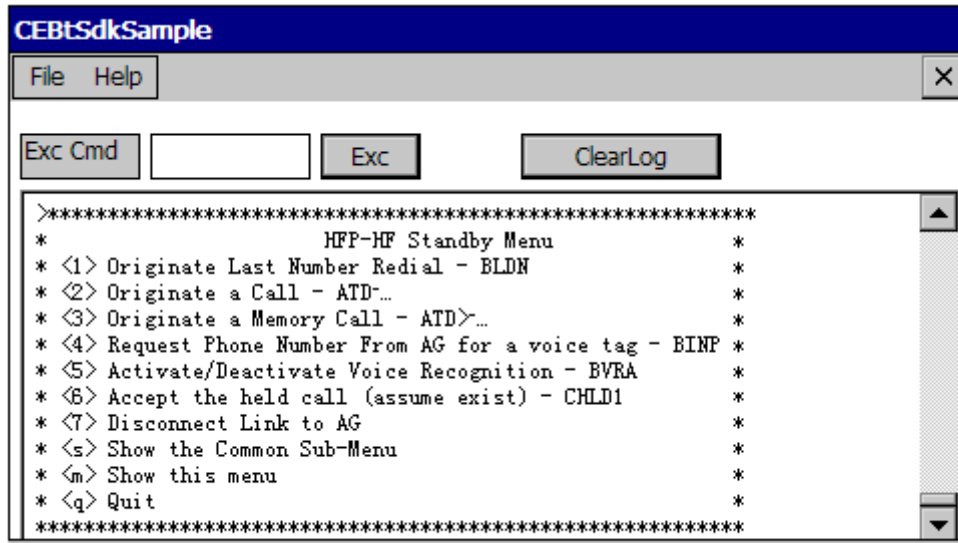


Figure12 HFP/HSP Standby Menu

1. Select '<1> Originate Last Number Redial' to redial the last call.
2. Select '<2> Originate a Call' then follow the guide to dial out a call.
3. Select '<3> Originate a Memory Call' then follow the guide to dial out the phone number indexed by the specific memory location of the SIM card.
4. Select '<4> Request Phone Number From AG for a voice tag' to attach a phone number to a HF device's voice tag, the voice tag is used for voice recognition.
5. Select '<5> Activate/Deactivate Voice Recognition' to activate or deactivate voice recognition.
6. Select '<6> Accept the held call (assume exist) ' to accept a held call (assume one held call exists).
7. Select '<7> Disconnect Link to AG' to release the connection with the AG.
8. Select '<s> Show the Common Sub-Menu' to show the Common Sub-Menu so that you can set the volume or get device model or do other operation.

If local device has already connected with remote AG and its current hand-free status is standby. 'Incoming Call Menu' will pop up when there is an incoming call.

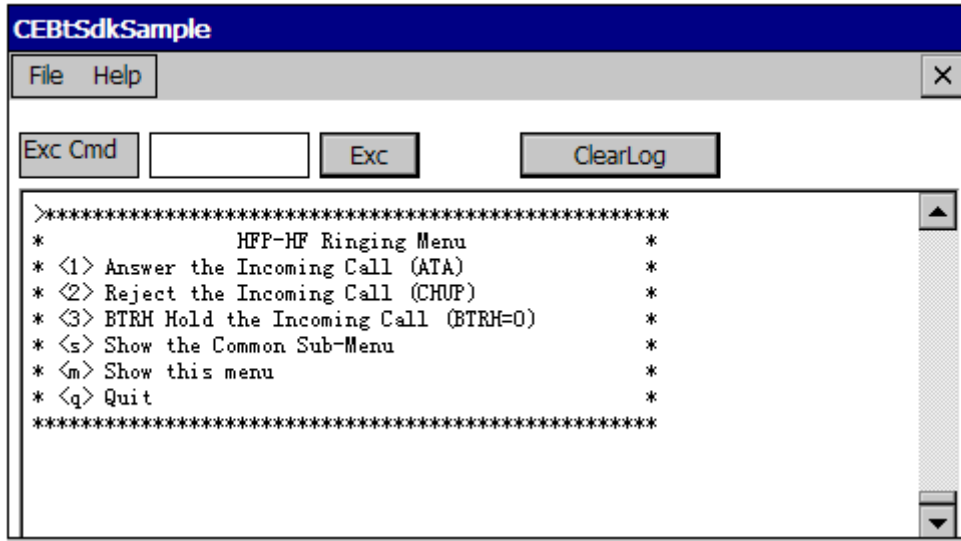


Figure13 Incoming Call Menu

1. Select '<1> Answer the Incoming Call' to answer the incoming call. This will lead you to enter the 'Ongoing Call' window.
2. Select '<2> Reject the Incoming Call' to reject the incoming call.
3. Select '<3> Hold the Incoming Call' to hold the incoming call, you can active this call later.

If the call is held, 'Held Incoming Call Menu' will pop up.

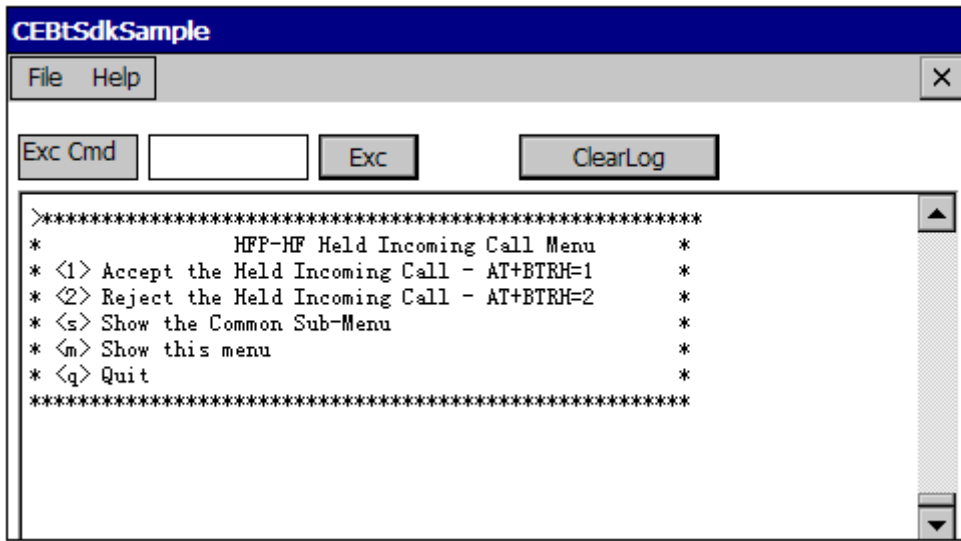


Figure14 Held Incoming Call Menu

1. Select '<1> Answer the Incoming Call' to answer the held incoming call.
2. Select '<2> Reject the Incoming Call' to reject the held incoming call.

If local device has already connected with remote AG and then you dial out a call, 'Outgoing call Menu' will pop up.

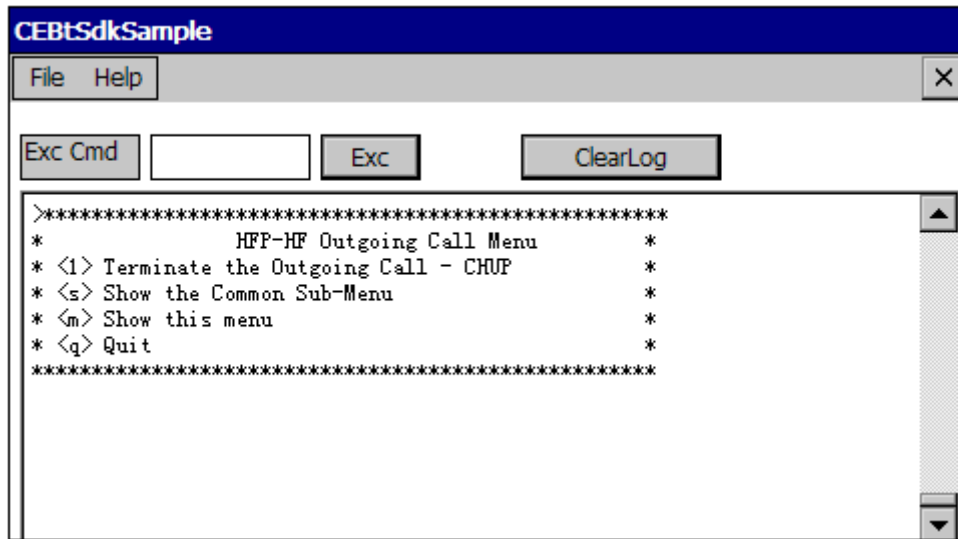


Figure14 Outgoing Call Menu

1. Select '<1> Terminate the Outgoing Call' to cancel the outgoing call.

If successfully dialing out a call or accepting an incoming call. 'Ongoing call Menu' will pop up.

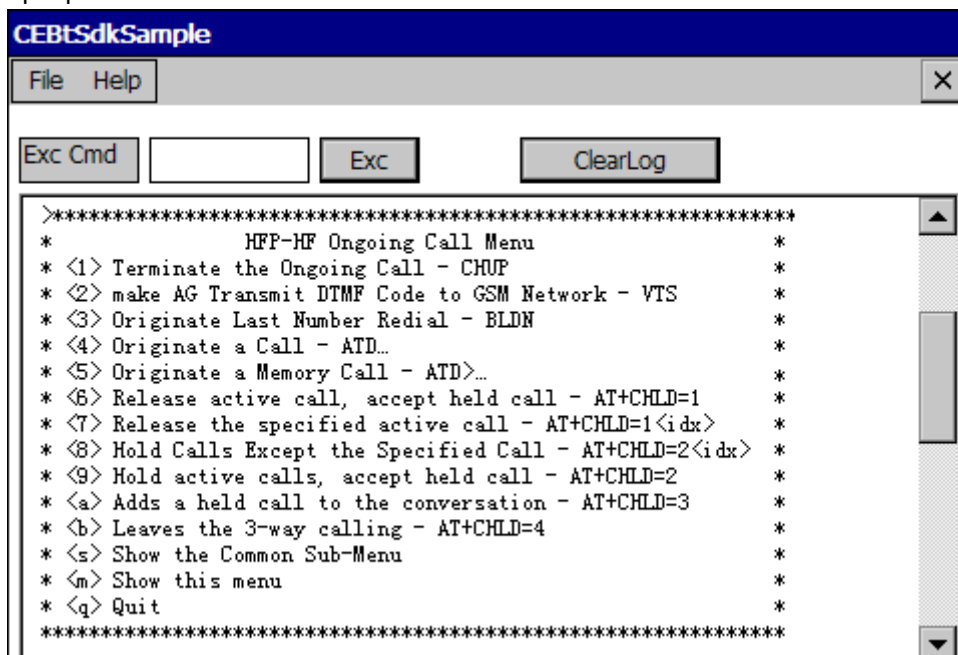


Figure15 Ongoing Call Menu

1. Select '<1> Terminate the Ongoing Call' to inform AG that HF device has cancelled the call.
2. Select '<2> make AG Transmit DTMF Code to GSM Network' to instruct AG to transmit the specific DTMF code.
3. Select '<3> Originate Last Number Redial' to redial the last number. If succeeds, it will start 3-way calling.

4. Select '<4> Originate a Call' then follow the guide to dial out a call.
5. Select '<5> Originate a Memory Call' then follow the guide to dial out a phone number indexed by the specific memory location of the SIM card.
6. Select '<6> Release active call, accept held call' to release active call and accept held call (assuming there is one active in call and another is on hold).
7. Select '<7> Release the specified active call' to release the call with specified indicated. In this demo, the call is always indicated by 1.
8. Select '<8> Hold Calls Except the Specified Call' to hold every call except the one with specified indicated. In this demo, the call is always indicated by 1.
9. Select '<9> Hold active calls, accept held call' to hold all active calls and accept the held call with the lowest call index.
10. Select '<a> Adds a held call to the conversation' to add a held call to the conversation. (assuming there is one active in call and another is on hold)
11. Select ' Leaves the 3-way calling' to leave the 3-way calling. (assuming there are two active calls)

If there already exists a call or, and a new incoming call incoming when there are more than one call, 'Waiting Menu' will pop up.

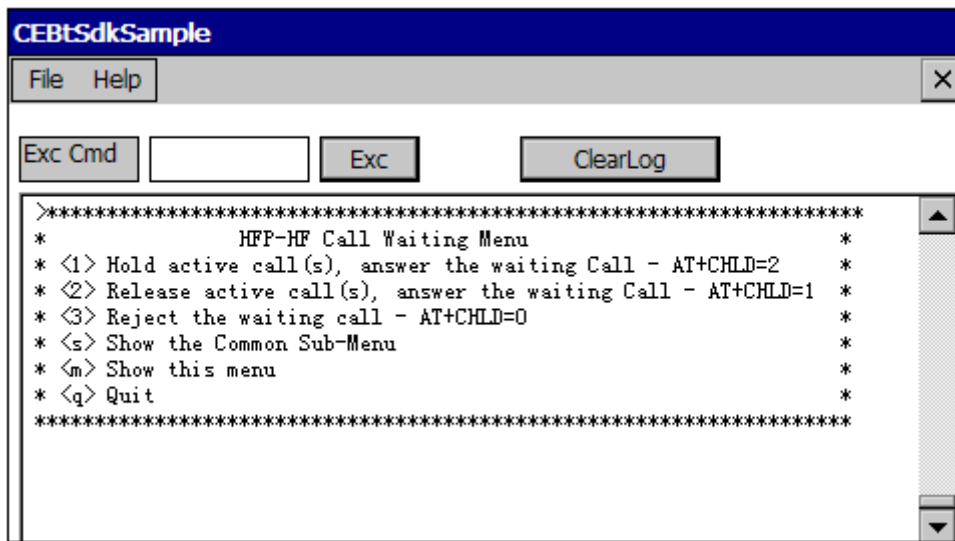


Figure16 Waiting Menu

1. Select '<1> Hold active call(s), answer the waiting Call' to hold active call(s) and then answer the waiting Call.
2. Select '<2> Release active call(s), answer the waiting Call' to release active call(s) and then answer the waiting Call.
3. Select '<3> Reject the waiting call' to reject the waiting call.

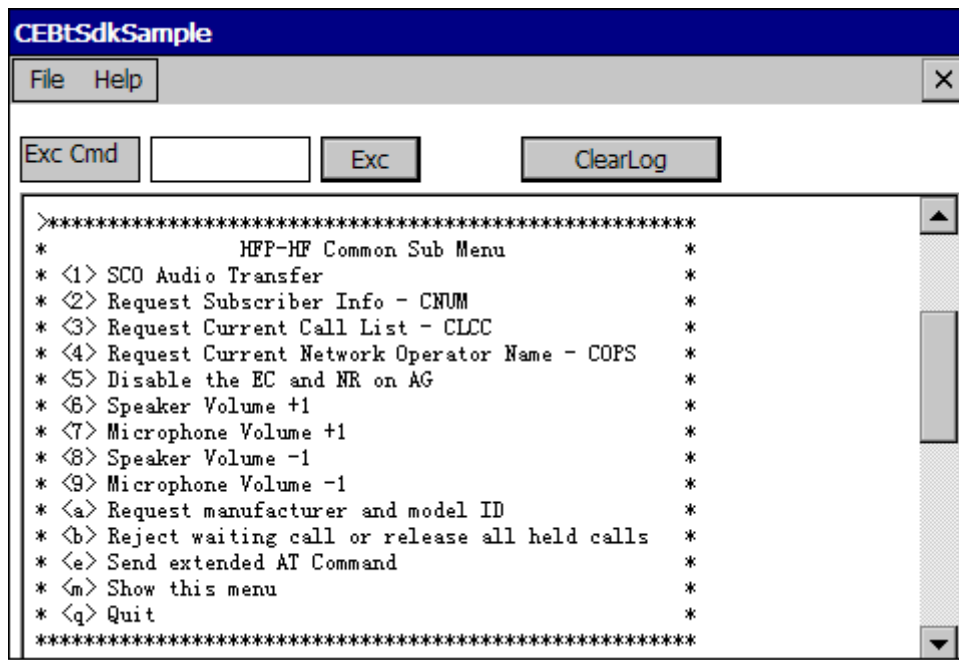


Figure17 Common Sub Menu

1. Select '<1> SCO Audio Transfer' to transfer the audio connection towards AG or HF.
2. Select '<2> Request Subscriber Info' to get the subscriber number information of AG.
3. Select '<3> Request Current Call List' to request current call list, the information of each existing call will be returned by BTSDK_HFP_EV_CURRENT_CALLS_IND event.
4. Select '<4> Request Current Network Operator Name' to request current network operator name, the network operator name will be returned by BTSDK_HFP_EV_NETWORK_OPERATOR_IND event.
5. Select '<5> Disable the EC and NR on AG' to disable noise reduce and echo cancellation of AG.
6. Select '<6> Speaker Volume +1' to increase speaker volume.
7. Select '<7> Microphone Volume +1' to increase microphone volume.
8. Select '<8> Speaker Volume -1' to decrease speaker volume.
9. Select '<9> Microphone Volume -1' to decrease microphone volume.
10. Select '<a> Request manufacturer and model ID' to get saved AG remote Manufacturer ID and model ID.
11. Select ' Reject waiting call or release all held calls' to request AG to reject waiting call or release all held calls.
12. Select '<e> Send extended AT Command' to send extend command to AG

Relevant files: hfp_tst.c

6.7.6 DUN Profile

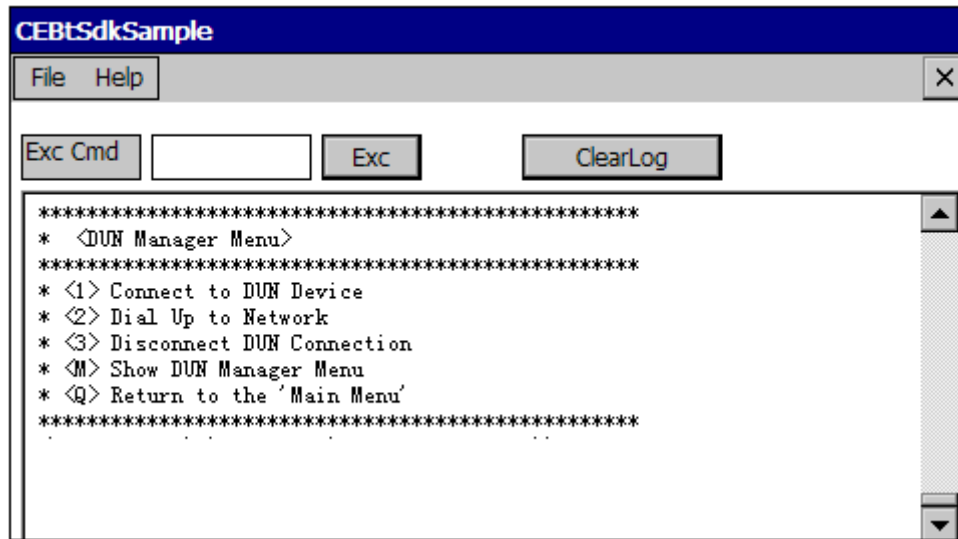


Figure17 Testing DUN profile

1. Select '<1> connect to DUN Device'. The devices searched before will be displayed. If there is no device available, start searching devices procedure once again by following the operation instructions in the program. Then select the expected remote device with DUN to connect with.
2. Select '<2> Dial UP to Network' to select the active DUN connection to dial up network.
3. Disconnect from remote service.

Note: The operations listed above should be completed step by step to make sure the continuity in function calling.

Relevant files: dun_tst.c

6.7.7 Personal Information Manager

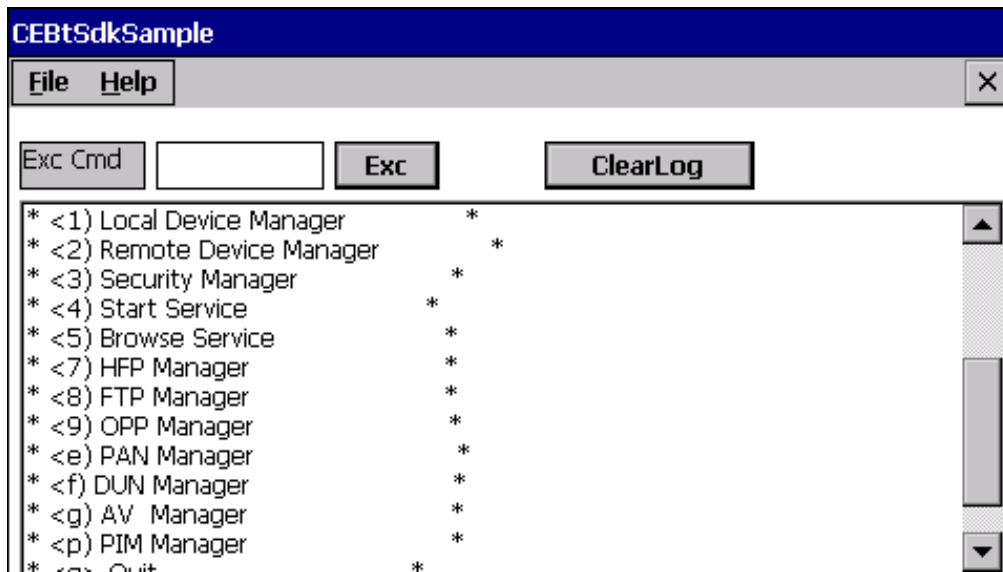


Figure18 Personal Information Manager

Select '<p>PIM Manager' to initialize all resources to launch personal information manager.

Note: Before using this module, HFP connection must be set up first!

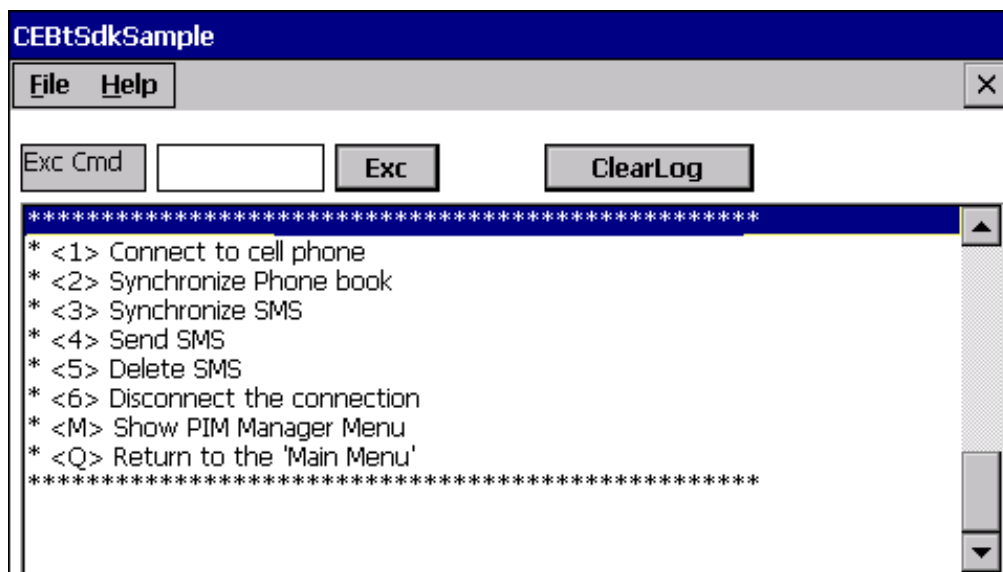


Figure19 Personal Information Manager

1. Select '<1> Connect to cell phone' to establish PIM connection to the remote cell phone which has set up a HFP connection with.
2. Select '<2>Synchronize Phone book' to get all phonebook from mobile phone.
3. Select '<3> Synchronize SMS' to get all short messages from mobile phone.

4. Select '<4> Send SMS' to send a SMS via mobile phone which is currently connected.
5. Select '<5> Delete SMS' to delete a short message from both local device and mobile phone.
6. Select '<6>Disconnect the connection' to increase speaker volume.
7. Select '<Q> Return to the 'Main Menu' releases all resources which are necessary in launching this module.

Relevant files: pim_tst.cpp