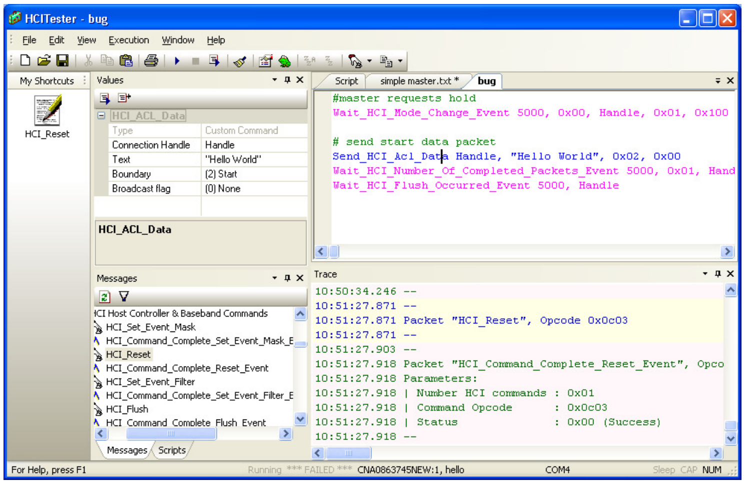
HCITester 2

Quick Reference



HCI_ACL_Data	
Type	Custom Command
Connection Handle	Handle
Text	"Hello World"
Boundary	(2) Start
Broadcast flag	(0) None

HCI_ACL_Data

```
#master requests hold
Wait_HCI_Mode_Change_Event 5000, 0x00, Handle, 0x01, 0x100

# send start data packet
Send_HCI_Acl_Data Handle, "Hello World", 0x02, 0x00
Wait_HCI_Number_Of_Completed_Packets_Event 5000, 0x01, Hand
Wait_HCI_Flush_Occurred_Event 5000, Handle
```

ICI Host Controller & Baseband Commands
- HCI_Set_Event_Mask
- HCI_Command_Complete_Set_Event_Mask_E
- HCI_Reset
- HCI_Command_Complete_Reset_Event
- HCI_Set_Event_Filter
- HCI_Command_Complete_Set_Event_Filter_E
- HCI_Flush
- HCI_Command_Complete_Flush_Event

```
10:50:34.246 --
10:51:27.871 --
10:51:27.871 Packet "HCI_Reset", Opcode 0x0c03
10:51:27.871 --
10:51:27.903 --
10:51:27.918 Packet "HCI_Command_Complete_Reset_Event", Opco
10:51:27.918 Parameters:
10:51:27.918 | Number HCI commands : 0x01
10:51:27.918 | Command Opcode      : 0x0c03
10:51:27.918 | Status              : 0x00 (Success)
10:51:27.918 --
```

Eldad Kuperman
Texas Instruments MCS

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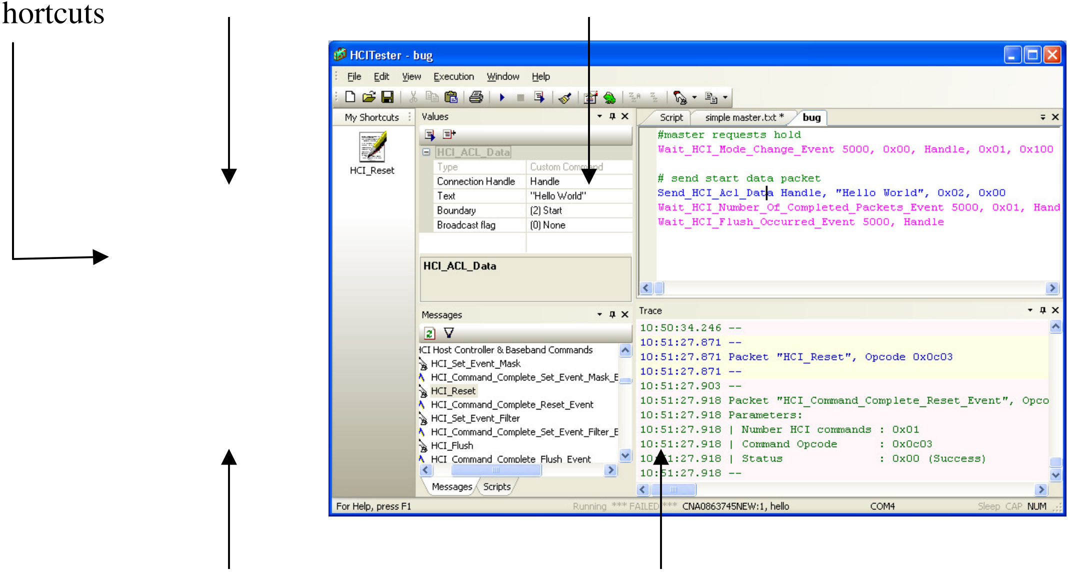
Overview

Custom Shortcuts

Current Values

Scripts Pane



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Wait_HCI_Flush_Occurred_Event 5000, Handle
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10:51:27.918 | Status              : 0x00 (Success)
10:51:27.918 --
```

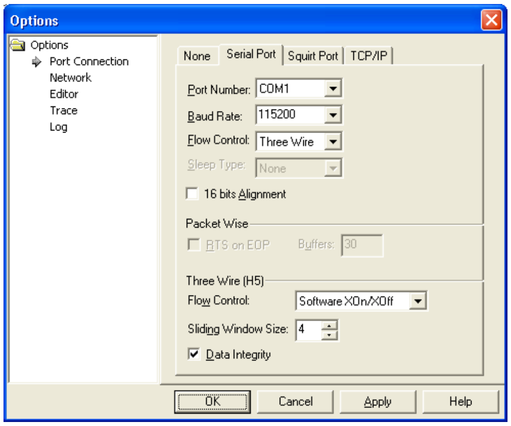
For Help, press F1   Running *** FAILED *** CNA0863745NEW:1, hello   COM4   Sleep CAP NUM

Commands

Log Trace

Setup And Config – Port

Configure the type of communication between HCITester and the device.



Port Number: COM1

Baud Rate: 115200

Flow Control: Three Wire

Sleep Type: None

□ 16 bits Alignment

Packet Wise

□ RTS on EOP Buffers: 30

Three Wire (H5)

Flow Control: Software XOn/XOff

Sliding Window Size: 4

☑ Data Integrity

None No connection

Serial Serial Port connection with the device. This connection supports different types of flow control and power mode (sleep) controls.

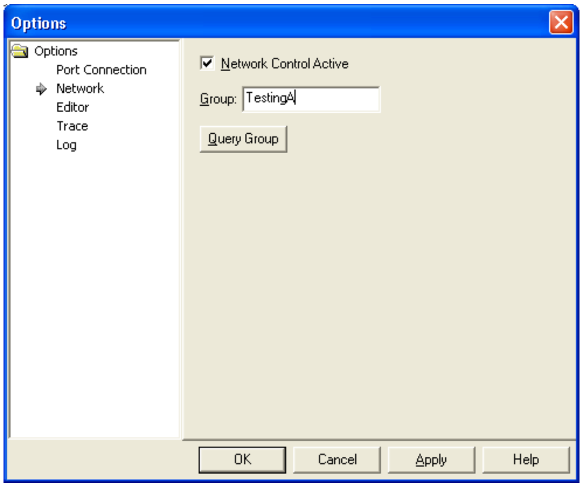
Squirt Connect using a squirt serial connection to be used in parallel to other applications using squirt port (such as Logger etc…)

TCP/IP Connect to device over the TCP/IP protocol of all types (synchronized or not, servers or clients).

Setup And Config – Network

Network configuration enables linking several HCITester applications running on different machines on the same network domain.

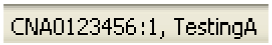
To bind a group of HCITester applications specify the same group name for them and check Network Control Active.



☑ Network Control Active

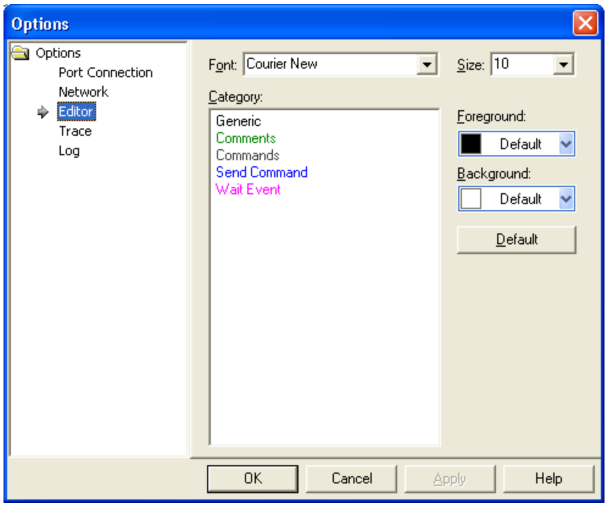
Group: TestingA

All HCITester application of the same group will start running together and will all stop together if Stop is clicked.

Status bar indication  CNA0123456:1, TestingA displays unique name given to the running process and the group name

Setup And Config – Editor

The font and the colors of editor’s elements can be customized.



Font: Courier New

Size: 10

Category:

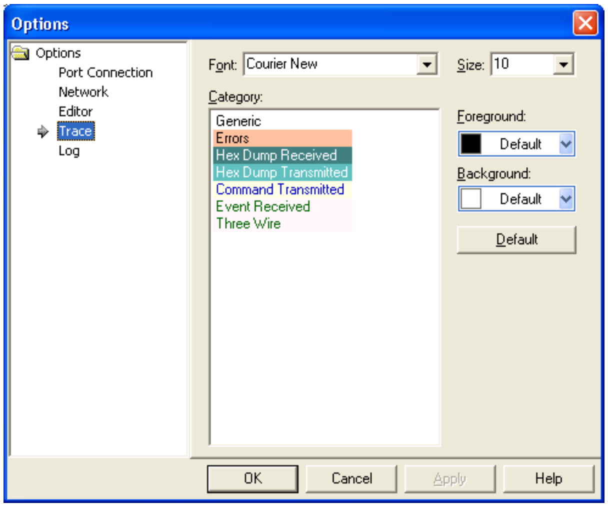
- Generic
- Comments
- Commands
- Send Command
- Wait Event

Foreground: Default

Background: Default

Setup And Config – Trace

The font and the colors of Trace window elements can be customized.



Font: Courier New

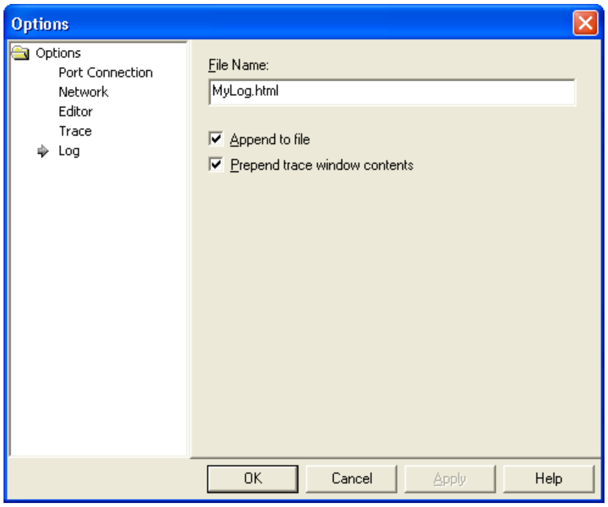
Size: 10

Foreground: Default

Background: Default

Setup And Config – Log

The log file automatically saves the trace window contents while a script is running.



File Name:
MyLog.html

☑ Append to file

☑ Prepend trace window contents

File Name: Three types of extensions:

.txt	Plain text file.
.htm	HTML formatted file.
.xml	XML data file information

Append If checked then the new log traces are appended to the existing file. Oterwise the file is created each time a new script is executed.

Prepend Add current displayed events to the Log file

Execution – General

▶ (F5) Execute current script

■ (F5) Stop current running script

(Ctrl+F5) Run only current focused selection:

- Selected script text
- Current line (if no selection)
- Current command in Values pane

Execution Indicator on status bar:

Running	While running
*** FAILED ***	Last Script Failed

Execution – Network Group

To setup a group of connected HCITester applications please refer to Page 5.

Start ▶, Stop ■ or Clear Trace 🖌 will operate on all HCITester applications in the group.

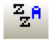
Apply Shift key to operate only on the local application.

WaitOtherPort command synchronizes between running applications.

Execution – Power Modes

HCITester supports these power modes:

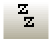
- HCILL
- Palau
- ThreeWire (set automatically if ThreeWire flow control is set.



HCITester will automatically control the power mode of the device. It will set it to sleep on a timeout and will awake the device if needed.

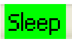
SetAutoSuspend command is a script command that controls this feature.

SetSuspendTimeout command sets the idle timeout value. The default value is 2000 milliseconds.



Manually sets the power mode. Click to set the device into sleep mode or to awake from sleep mode.

SetAutoState command is a script command that controls this feature.



Status bar indicator that the connected device is on sleep mode.

Script – Types of Commands

- Prefix “Send_” specifies a packet of data to be sent out through the current port.
- Prefix “Wait_” specifies an expected incoming packet event.
- Prefix @ specifies asynchronous event.
- Prefix + specifies synchronous event.
- Prefix $ specifies a labeled line (for Goto)
- Prefix # specifies a single line remark.

Script – Waiting fo packets

- First parameter is always Timeout value.
- Timeout 0 (zero) specify Infinite.
- Each incoming parameter data is being compared to the data in the script. If different then the script will stop with failure.
- Parameter “Any” passes each parameter with no failure.
- Variable with ‘&’ prefix (&Var) assigns the incoming data into the specified variables.

E.g.

```
# Wait 4 seconds for a packet.
# Parameter 1 must be 2.
# Parameter 2 is ignored (“Any”).
# Parameter 3 must equal to 3*Vector.
# Parameter 4 assigned into variable Mode.

Wait_Packet 4000, 2, Any, 3*Vector, &Mode
```

Script – Asynchronous Events

Asynchronous events handling are specified in two forms: OnEvent block or single line.

OnEvent Block

```
OnEvent Wait_My_Command_Event 5000, …
      Log "Processing the event…"

      # The following line restarts this
      # event after returning to the
      # interrupted code
      RestartEvent

OnTimeout
      # Disable the default timeout
      # handling and continue
      # (optional)
      ClearTimeout

OnMismatch
      # Disable the default mismatch
      # handling and continue (optional)
      ClearMismatch

End Event
```

Single line

Adding a prefix '@' specifies asynchronous event:

```
@Wait_My_Command_Event 5000, …
```

Adding a prefix '+' specifies synchronous event (default):

```
+Wait_My_Command_Event 5000, …
```

Change the default mode of wait commands using the command EnableAsyncEvents.

Operations

If incoming event has been matched as an asynchronous event then:

- Parameters are checked or assigned (E.g. get_handle, &my_data)
- Event must arrive before Timeout expires (on cases when timeout is not 0 (not infinite).

WaitForAllEvents command waits until all asynchronous events succeeded.

ClearAllEvents command cancels all active asynchronous events.

If the script has been finished and events are still pending then an error will be reported. Use WaitForAllEvents and/or ClearAllEvents if needed.

If ClearTimeout or ClearMismatch will not be called then the standard error will be displayed and the script will end.

RestartEvent command triggers again the event and it is valid only within OnEvent block.

Script – Blocks and Conditions

If…Else

```
If <expr> Then
[ElseIf <expr> Then]
[ElseIf <expr> Then]
[Else]
EndIf
```

For…Next

```
For <cntr>=<Start> To <Stop> [Step <step>]
[Exit For]
Next
```

Do…Loop

```
Do {While|Until} <expr>
[Exit Do]
Loop

Do
[Exit Do]
Loop {While|Until} <expr>
```

While…Wend

```
While <expr>
Wend
```

Script – Internal Commands

CallFile strPath [, param1 …]

Load and execute a file containing a script. After this script finishes then the execution point returns and continues with the line after this.
Optional parameters can be passed. These parameters are referenced as %1, %2, … (parameter 1, parameter 2 and so on…).

< strPath [, param1 …]

The same as CallFile

ClearAllEvents

Cancels all active asynchronous events.

ClearMismatch

Valid only within OnMismatch handler and is used to clear the mismatch flag (and continue processing as if no error occurred).

ClearTimeout

Valid only within OnMismatch handler and is used to clear the timeout flag (and continue processing as if no error occurred).

ClearVariables

All internal variables are deleted.

CloseAllDocuments

Closes all opened documents except the one which currently running.

COM_SetParams nBaud, nFlowControl, nAlign

Dynamically change the serial port parameters.

COM_SetSleepType nSleepType

Dynamically change the currently sleep type.

EnableAsyncEvents bEnable

Sets the default behaviour of events as Synchronized or not (See Page 14 for details).

EnableHexDump bIncoming, bOutgoing

Enable or disable hex dumping for incoming and outgoing events.

Execute bWait, strCmd [, strArgs [, strFolder]]

Execute external tool. If bWait=True then the command will return only after the tool will finish execution. E.g.

```
# Execute “Notepad”
Execute False, "Notepad"
```

Exit

Finish processing the current running script or macro and return back to the caller script.

Fail strReasonFormat [, param1 …]

Manually fail the current running script.

GoTo $label

Branches the execution to a labeled line, E.g.

```
$start
# …
goto $start
```

HardReset nTime

Sets parallel port pins to 0, waits nTime milliseconds and then sets the parallel port back to 1.

IgnoreEvent EventName, bIgnore

Add an event packet to the ignored-list (if bIgnore=True) or removes an event packet from the ignored-list.

LoadFile Variable, strPath

The variable is set to the contents of the file specified by strPath.
Both binary and text files are supported.

Log strMsgFormat [, param1 …]

Adds a formatted text to the Trace window.

Pause strMsgFormat [, param1 …]

Pauses the script from running, Prompts the user an OK/Cancel message and waits for the user action.
If the user clicks on Cancel then the script stops running with a failure.

Reconnect

Closes the current port and then reconnect again. This is used for port reset synchronization.

RestartEvent

Valid only within OnEvent block and re-triggers again the current event.

Resume

Puts the connected device to an active state, depends on the current port connection type.

Return

Valid only within OnEvent block. Return finishes current block processing.
Note: If the event has a mismatch or a timeout then the script will fail with the corresponding error message.

SetAutoSuspend bEnable

Enable or disable automatic power mode control (See Page 11 for details).

SetParallelPort nOffset, nData

Writes a value nData to the parallel port (0x378 + nOffset).

SetSuspendState bSuspended

Sets the current state of the device with no acual action (used to synchronize HCITester with the device).

SetSuspendTimeout nMinTime [, nMaxTime]

Sets the idle timeout range (in milliseconds) needed to automatically set a sleep power mode on the device.
The actual time is a random number between nMinTime and nMaxTime.
If only nMinTime is specified then the time is fixed.

SetThreeWireParams nFC, nSize, nIntegrity

Dynamically change parameters of current Three-Wire connection.

Sleep nDuration

Delays the script for nDuration milliseconds. Incoming events are filtered during the delay.

Suspend

Puts the connected device to a sleep state, depends on the current port connection type.

WaitForAllEvents nTimeout, bIncludeInfinite

Waits until all asynchronous events are resolved.
If bIncludeInfinite=True then the command waits for all asynchronous events including the infinite ones (specified with timeout=0).

WaitOtherPort strSyncPoint, nCount, nTimeout

Synchronizes scripts running on separate machines (See Page 10 for details).

WriteFile strPath, nType, strText

Writes a text into a file. If nType=0 then the file is trncated if it exists. If nType=1 then the text is appended to an existed file.

WritePort Variable

Write the contents of the variable to the current port.

Script – Expressions

Expressions are C compatible syntax, E.g.:

```
MyVar = (level * (3 + factor)) << bits
```

Arithmetic Operators:

```
+   -   *   /   %   &   |   ^   <<   >>
```

Comparison Operators:

```
==   !=   <   >   <=   >=
```

```
Assignment Operators:
=   +=   -=   *=   /=   %=   &=   |=   ^=   <<=   >>=
```

```
Conditional Expression
expr ? expr : expr
```

Script – Functions

Return Value	Function	Description
String	Hex (value [,zeros])	Returns a string of hex representation.
Number	Len (text)	Returns the length of a text.
Number	Max (x, y)	Returns the highest between x and y.
String, Data	Mid (data, start [, len])	Returns a middle portion of data.
Number	Min (x, y)	Returns the lowest of x and y.
Number	Pow (x, y)	returns x by the power of y.
Number	Rand (min, max)	Returns a random number between min and max.
Number	Size (data)	Returns the total bytes of data.
String	Str (number)	Returns a string representation of the value.
Number Equal = 0 str1<str2 = -1 str1<str2 = 1	StrComp (str1, str2 [, IsCaseInsensitive])	Compares two strings (strcmp like)
Data	ToData (data [,bytes])	Transform the data into a sequence of bytes

Number	Val (text)	Transform the string into a value (atoi like).

Script – Types of data

Set variables

- Integer
  E.g. MyVar = 123

- String
  E.g. MyVar = “Hello”

- Floating Point
  E.g. MyVar = 123.04

- Data (array of bytes):
  E.g. MyVar = ToData(0x1F, 2) + ToData(0, 1)

Expressions Samples

```
# A number can be added to a string:
DivResult = 2/4
strResult = “Result is: “ + DivResult
Log strResult

# Create an array of 10 zero bytes
array = todata(0, 10)

# Add the number 0x00001234 to the end
array += todata(0x1234, 4)
```

GUI – Shortcut Keys

Command	**Action**
F5	Execute or Stop script execution
Ctrl+F5	Execute current selection
F11	Execute last command
F12	Switch to last executed script
Ctrl+F11	Popup a list of last commands
Ctrl+F12	Popup a list of last executedscripts
F8	Clear Trace

Editor Commands	**Action**
Ctrl+C	Copy selection to clipboard
Ctrl+V	Paste from clipboard
Ctrl+X	Cut selection to clipboard
Ctrl+F	Popup Find dialog box
Ctrl+H	Popup Replace dialog box
F3	Repeat last search
Shift+F3	Repeat last search backwards
Ctrl+F3	Search for current word
Ctrl+A	Select all text
Ctrl+Z	Undo last action
Ctrl+Y	Redo the previously undone action

File Commands	**Action**
Ctrl+N	Create a new script
Ctrl+O	Open an existing script file
Ctrl+P	Print the current script
Ctrl+S	Save the current script
Ctrl+F6	Switch to the next script
Ctrl+Shift+F6	Switch to the previous script

Undocumented Commands	**Action**
Ctrl+Shift+ Numpad-	Switch RTS on the serial port.
Ctrl+Shift+ Numpad+	Switch DTR on the serial port.
Ctrl+0..9	Run pre assigned scripts 0 to 9. Add Shift for 10 to 19
Ctrl+Alt+0..9	Assign a script 0 to 9. Add Shift for 10 to 19

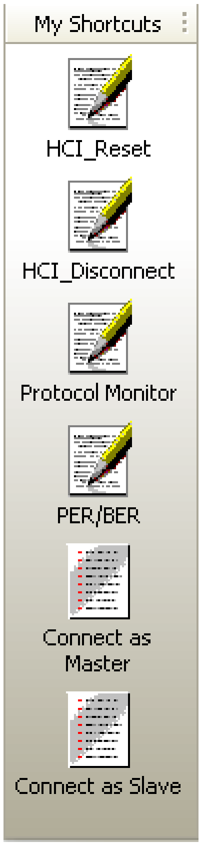
GUI – Menu Commands

GUI – Command Line

GUI – Framework

- Skip
- Dock
- Auto Hide
- Key Configuration
- Customization

GUI – My Shortcuts Pane



My Shortcuts pane holds quick access to predefined script files and code fragments.

Shortcut to script file: Drag a the script from Scripts pane or from Explorer windows.

Shortcut to code fragment: Drag the selected code in the editor.

Run and/or Load?: Right click and select Edit… to specify the behavior while clicking on this shortcut.

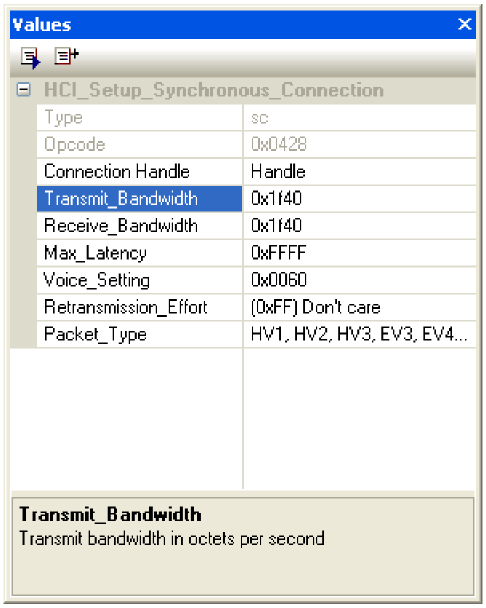
Display Name: Right click and select Edit… to specify a customized label.

Right Click Menu: Explicitly Run, Load, Delete or Edit its properties.

Shift + Click: Run the shortcut now.
Ctrl + Click: Load the shortcut.

GUI – Values Pane

Displays the values of the current selected command.



HCI_Setup_Synchronous_Connection

Type	sc
Opcode	0x0428
Connection Handle	Handle
Transmit_Bandwidth	0x1f40
Receive_Bandwidth	0x1f40
Max_Latency	0xFFFF
Voice_Setting	0x0060
Retransmission_Effort	(0xFF) Don't care
Packet_Type	HV1, HV2, HV3, EV3, EV4...

Transmit_Bandwidth
Transmit bandwidth in octets per second

Always reflects the current selection in the editor or in the Messages Pane.

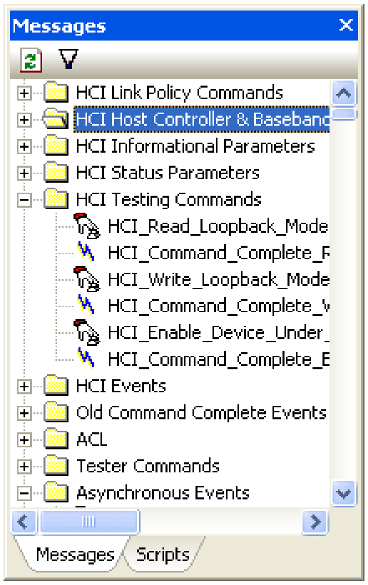
If reflects a script line in the editor then changing the values will also change the script text.

(Ctrl+F5) – Execute the listed command.

- Adds the listed command to the scipt.

GUI – Messages Pane

Messages Pane contains a list of all the supported commands and events.



- HCI Link Policy Commands
- HCI Host Controller & Basebanc
- HCI Informational Parameters
- HCI Status Parameters
- HCI Testing Commands
  - HCI_Read_Loopback_Mode
  - HCI_Command_Complete_F
  - HCI_Write_Loopback_Mode
  - HCI_Command_Complete_V
  - HCI_Enable_Device_Under_
  - HCI_Command_Complete_E
- HCI Events
- Old Command Complete Events
- ACL
- Tester Commands
- Asynchronous Events

Incremental Search: Type the partial text to locate the command. F3 will search forward and Shift+F3 will search backward.

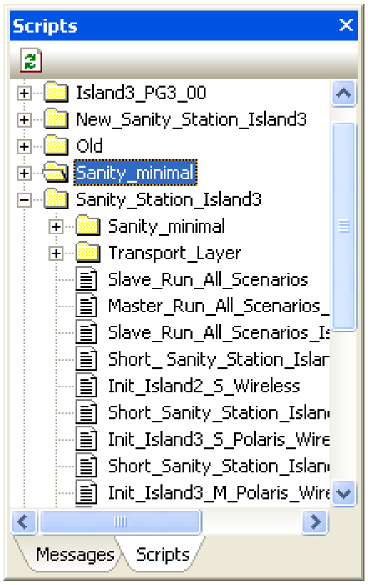
Ctrl + Double Click: Adds the command to the script along with its related commands.

⟳ - Refresh the contents of Scripts Pane.

▽ - Filters the contents of Scripts Pane.

GUI – Scripts Pane

Scripts Pane contains all the scripts files from the chosen root (see command line in Page 28).

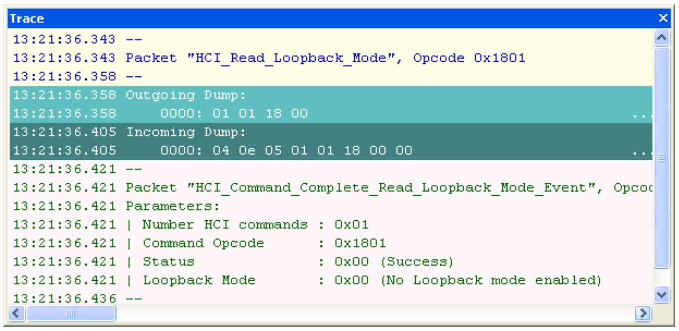

Scripts
Island3_PG3_00
New_Sanity_Station_Island3
Old
Sanity_minimal
Sanity_Station_Island3
Sanity_minimal
Transport_Layer
Slave_Run_All_Scenarios
Master_Run_All_Scenarios_
Slave_Run_All_Scenarios_Is
Short_ Sanity_Station_Islar
Init_Island2_S_Wireless
Short_Sanity_Station_Islan
Init_Island3_S_Polaris_Wire
Short_Sanity_Station_Islan
Init_Island3_M_Polaris_Wire
Messages
Scripts

Incremental Search: Type the partial text to locate the script. F3 will search forward and Shift+F3 will search backward

🔄 - Refresh the contents of Scripts Pane.

GUI – Trace View

Logs the activities of HCITester.



```
13:21:36.343 --
13:21:36.343 Packet "HCI_Read_Loopback_Mode", Opcode 0x1801
13:21:36.358 --
13:21:36.358 Outgoing Dump:
13:21:36.358     0000: 01 01 18 00                                      ..
13:21:36.405 Incoming Dump:
13:21:36.405     0000: 04 0e 05 01 01 18 00 00                          ..
13:21:36.421 --
13:21:36.421 Packet "HCI_Command_Complete_Read_Loopback_Mode_Event", Opcod
13:21:36.421 Parameters:
13:21:36.421 | Number HCI commands : 0x01
13:21:36.421 | Command Opcode      : 0x1801
13:21:36.421 | Status              : 0x00 (Success)
13:21:36.421 | Loopback Mode       : 0x00 (No Loopback mode enabled)
13:21:36.436 --
```

Customize Colors: Select Trace option in Options dialog box.

Automatic Save to File: Select Log option in Options dialog box.

Export to File: Select Export Trace Log… from File menu.

GUI – Editor

XML – General

- Command Line
- Taggs

XML - Structure

XML - <Packet>

XML - <Command>

XML - <Param>

Internal dynamic variables:

packet_size
packet_offset
packet_remain

XML – Predefined Types

XML - <Values>

XML - <Types>