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BlueTest2

Operation Manual

Bluetooth®

Production line software for the MT8850A/52A/52B

BlueTest2 Operation Manual

For use with MT8850A/52A/52B

Anritsu

Originated by Anritsu Ltd, SRWBU, Stevenage, U.K.

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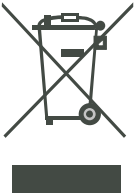
Crossed-out Wheeled Bin Symbol

Equipment marked with the Crossed-out Wheeled Bin Symbol complies with the European Parliament and Council Directive 2002/96/EC (the “WEEE Directive”) in European Union.



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The documentation:	All documentation associated with the software whether printed or on-line.

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Symbols Used in This Manual

Danger	Indicates a very dangerous procedure that could result in serious injury or death if not performed properly.
Warning	Indicates a hazardous procedure that could result in serious injury or death if not performed properly.
Caution	Indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and In Manuals

Some or all of the following five symbols may or may not be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE operating the equipment.

This symbol indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

This symbol indicates a compulsory safety precaution. The required operation is indicated symbolically in or near the circle.

This symbol indicates warning or caution. The contents are indicated symbolically in or near the triangle.

This symbol indicates a note. The contents are described in the box.

These symbols indicate that the marked part should be recycled.

For Safety

Always refer to the operation manual when working near locations at which the alert mark, shown on the left, is attached. If operation is performed without heeding the advice in the operation manual, there is a risk of personal injury. In addition, the equipment performance may be reduced.

Moreover, this alert mark is sometimes used with other marks and descriptions indicating other dangers.

Or

When supplying AC power to this equipment, connect the accessory 3-pin power cord to a 3-pin grounded power outlet. If a grounded 3-pin outlet is not available, use a conversion adapter and ground the green wire, or connect the frame ground on the rear panel of the equipment to ground. If power is supplied without grounding the equipment, there is a risk of receiving a severe or fatal electric shock.

The operator cannot repair this equipment. DO NOT attempt to remove the equipment covers or to disassemble internal components. Only qualified service technicians with knowledge of electrical fire and shock hazards should service this equipment. There are high-voltage parts in this equipment presenting a risk of severe injury or fatal electric shock to untrained personnel. In addition, there is a risk of damage to precision components.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Table of Contents

Chapter 1. About this Manual

Purpose and Scope of this Manual

The BlueTest2 software can be used with all models of the *Bluetooth* Test Set, although users of the MT8850A and MT8852A will not have access to the EDR test results. For the purpose of convenience, the MT8852B is used in explanations in this manual.

This manual has been designed as an introduction to the BlueTest2 production line software. No prior knowledge of the BlueTest2 software is assumed, although a familiarity with the purpose and operation of the MT8852B unit is required.

The majority of the user settings found within the BlueTest2 software have direct equivalents at the MT8852B, and for this reason the reader is asked to refer to the main operation manual if detailed setting related explanations are required. Whenever possible the equivalent page on the MT8852B interface has been identified.

The reader is presumed to be familiar with the operation of, and terminology associated with, a Microsoft Windows operating environment.

Your Comments on this Manual

Every effort has been made to ensure that this manual is thorough, easy to use, and free from errors. However, to ensure continued improvement, we would welcome your comments on this, or any other Anritsu document.

Please contact us at the address below if you have any comments, good or bad, find any errors or omissions, or have any suggestions on how our documentation could be improved further.

bluetooth.support@anritsu.com

Your comments will be logged and reviewed, and whenever possible, will be reflected in a subsequent release of the document.

Software Version

This manual provides details of the operation and functionality of the following software version:

BlueTest2: 1.2.4

Using this Manual

Users are advised to read through this manual in its entirety before running the software. The manual should be kept with the unit for reference purposes thereafter. A brief summary of each of the chapters is given below.

Chapter 1 **About this Manual**

Details of the manual itself, how it is structured, and how to use it.

Chapter 2 **What is BlueTest2?**

An overview of the product, its features and options.

Chapter 3 **Installation**

Details of the installation procedure and required operating environment.

Chapter 4 **Getting Started**

A description of how to access and run the BlueTest2 program.

Chapter 5 **Configuring the System**

Details of the settings on the [System Configuration] tab.

Chapter 6 **Making Script and Test Limit Settings**

An explanation of the specific script related settings found on the [Bluetooth Test Set Configuration] tab.

Chapter 7. **Running the Tests**

How to commence testing from the [Run Bluetooth Test] tab.

Chapter 8 **Results and Reports**

Details of how to check the individual pass or failure status for a specific test and how to view an entire test report.

Appendix A **GPIB Setup**

Details of the GPIB driver configuration recommended for reliable GPIB communication with the MT8852B *Bluetooth* Test Set.

Appendix B **BlueTest2 Source Code**

A breakdown of the BlueTest2 source code.

Appendix C Error! Reference source not found.

A glossary of acronyms commonly used in this manual or in technical documentation associated with *Bluetooth*.

Notation Conventions Used in This Manual

[System Configuration]	The tabs on the BlueTest2 window are enclosed in square brackets.
[Anritsu BlueTest2]	The names of windows and dialog boxes are enclosed in square brackets.
“EUT Address”	Text appearing within the body of a window is enclosed in quotation marks.
[Browse…]	The names of buttons that appear within windows or dialog boxes are enclosed in square brackets.
“Output Power”	Check boxes that appear in windows or dialog boxes are enclosed in double quotation marks. The term “select” is used to refer to the action of placing a tick within a check box.
[Shift]	The names of keys that appear on the PC keyboard are enclosed by square brackets.
Config	This style is used for the hard keys on the unit itself.
[**Setup**]	Soft keys that display on the screen are enclosed in square brackets. Pressing a soft key provides access to menu options, toggles selections and allows data entry.

Chapter 2. What is BlueTest2?

Anritsu have developed the BlueTest2 software to increase the efficiency of *Bluetooth* testing on the production line. The software provides a remote means to control and run *Bluetooth* tests on up to 16 MT8852B units simultaneously. This simultaneous connection not only means that tests can be performed quickly and easily, but also that script and configuration settings can be copied between the test sets in the line.

The key features of the system are summarised below.

- Run *Bluetooth* tests remotely using up to 16 MT8852B test sets.
- Copy settings from any of the test sets to BlueTest2.
- Apply settings from BlueTest2 to all of the test sets in the line.
- View and print detailed reports of the tests conducted.
- Write test results to a database on the local drive or to a separate server computer.

Chapter 3. Installation

Follow the procedure below to install the BlueTest2 software.

1. Double-click the “Setup.exe” file. When the “Setup.exe” file is clicked, the installation checks to see if Microsoft .NET Framework 1.1 or later is already installed on the computer.

   - If .NET Framework is found, the installation continues and the initial [BlueTest2] window displays. Click [Next>] to display the [License Agreement] window.
   - If .NET Framework is not found, a message displays prompting the user to return to the installation disk and use the supplied “Dotnetfx.exe” file to install .NET Framework before continuing with the installation.

2. Read the license agreement carefully. When you have read the agreement and agree to the terms, click the “I agree” option and then click [Next>] to display the [Select Installation Folder] window.

3. By default BlueTest2 is installed to C:\Program Files\Anritsu\BlueTest2.
   Click [Next>] to install to the default location, or click [Browse…] to specify a different folder.

Note: BlueTest2 and the associated source code will not operate correctly if installed on a network drive.

4. Click [Next>] at the [Confirm Installation] window to display the [Installing BlueTest2] window. The installation process now begins.

5. Click [Close] when installation is complete.

Note: A database file is automatically created when BlueTest2 is installed. The default location for this file is C:\Program Files\Anritsu\BlueTest2\BlueTest2 Source Code\BT2 Test Results.BTD, but it can be moved to a different location if required. The user can also browse the system to find an alternative database, but at these times a message displays to notify the user that the selected database will be automatically updated with additional fields and tables.

Note: For smooth operation of BlueTest2 the NI VISA runtime library must be installed on the host PC. The following error message will display if this library is not installed. A copy of the NI VISA library can be found in the BlueTest2 installation folder or can be downloaded directly from the National Instruments website.

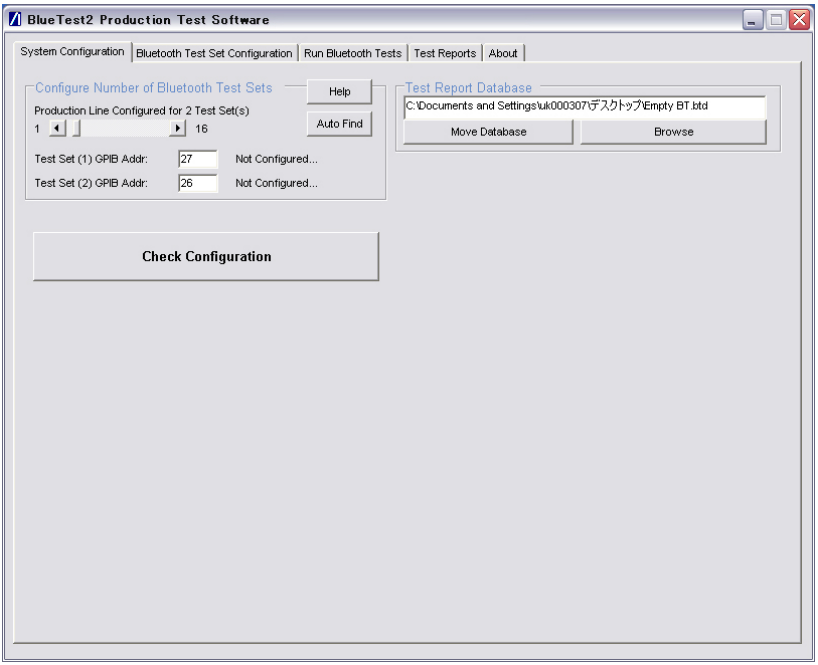
Operating Environment

The BlueTest2 software is designed to operate on Windows XP or Vista in an English, Japanese, or Chinese language environment. Performance cannot be guaranteed when installed on any other system.

Note: A GPIB interface card and lead are required to use the BlueTest2 software.

Chapter 4. Getting Started

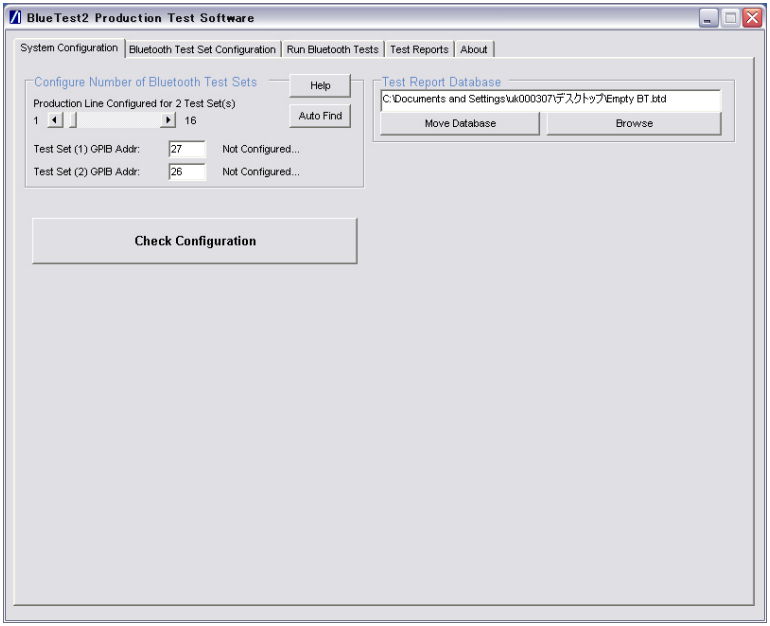
1. Double-click the [BlueTest2] icon generated on the desktop, or select [BlueTest2] from the [Anritsu] folder within the programs section of the Windows [Start] menu.
2. When BlueTest2 is started the main [BlueTest2 Production Test Software] window displays with the [System Configuration] tab selected by default.



Chapter 5. Configuring the System

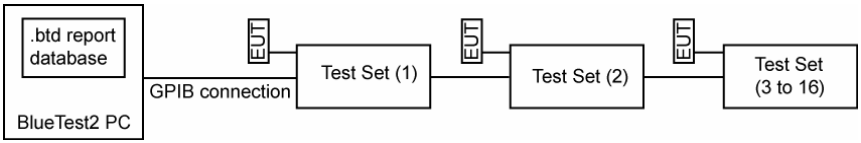
1. Click the [System Configuration] tab to display the page shown below.

The [System Configuration] tabbed page contains the settings relating to the connections and configurations of the system in place.



To understand the settings on this page, the system configurations will now be examined.

Up to 16 MT8852B units can be controlled through a GPIB connection with the PC on which the BlueTest2 software is installed. Each MT8852B must have a unique GPIB address, but the *Bluetooth* address' of the EUTs can either be the same or can all be different. As will be detailed later in this manual, the results for the tests that have been run are written to a Microsoft Access formatted database (.btd) located by default in the BlueTest2 directory on the PC.

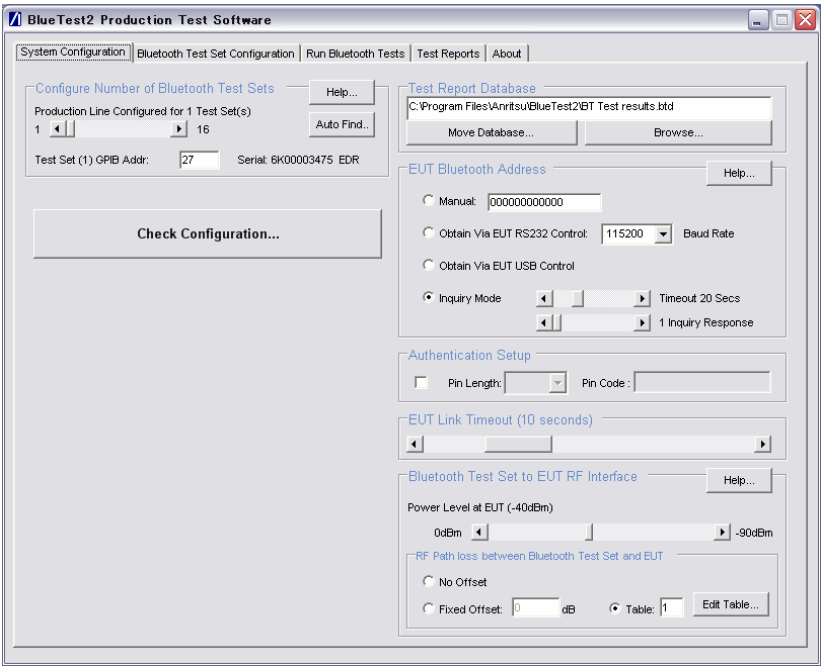


2. Use the scroll bar under the heading “Production line configured for 1 Test Set(s)” to select the number of test sets in the production line. As the number is increased you will notice that an additional line appears for specification of the GPIB address.

Note: Up to 16 test units can be controlled simultaneously and each must have a valid and unique GPIB address between 1 and 30. For the purposes of this manual we are using a set-up with two units connected to the BlueTest2 PC.

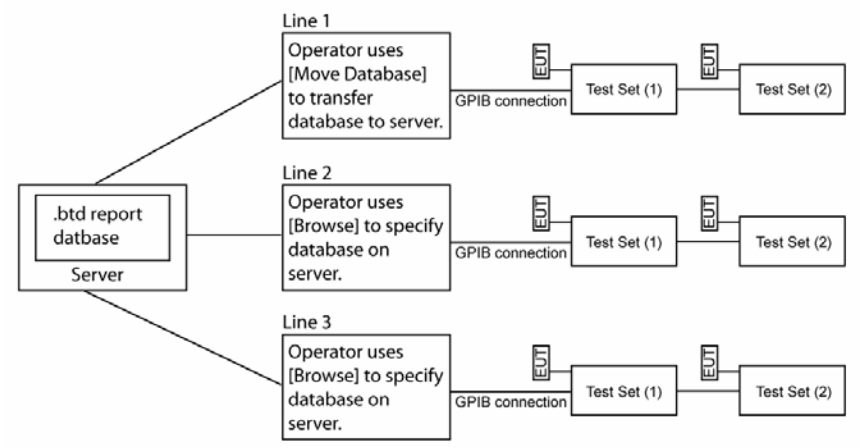
3. Click the [Check Configuration…] button beneath the GPIB address boxes to check the configuration. If no problems are detected, a message displays informing you that the configuration has been verified and that testing can now be commenced.

   When a connection has been established, additional settings display on the right side of the window as shown below.



4. The location to which the test results are written is shown in the “Test Report Database” text box. The user can either accept this location (and in this case, no action is required), or can opt to move it or specify a separate location.

The “Test Report Database” field allows the user to move or specify the location of the database to which the test results are written. By default the results are written to a local Microsoft Access formatted database in the BlueTest2 installation base directory. However this can be moved to either a different location on the same computer, or to any other networked computer. Refer to the figure below.

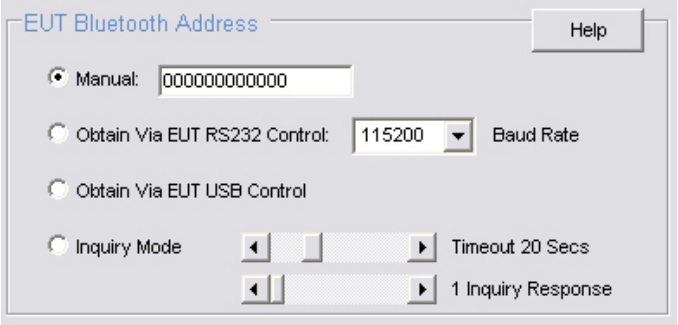


Note: The user can browse to an existing database on a server that does not support EDR measurements. However, the user must have been granted permission to modify the file as BlueTest2 will modify the database by adding additional fields and tables.

To move the database, click the [Move Database…] button and specify the new location. As the name implies, use of [Move Database..] will move the database to the specified location and then delete the original. In the figure above, the report database for production line 1 has been moved to a separate server computer.

The user can also press the [Browse…] button to specify a different location to which the results are written. This differs from the Move option in that the original database on the line PC is not deleted but simply remains empty with the test results being written to the specified alternative location. In the case of the figure above, the operators at lines 2 and 3 have used the [Browse…] button to specify the database on the server.

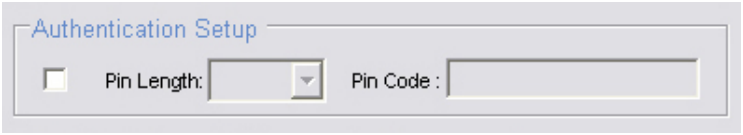
5. Select the required *Bluetooth* address option from the four options available.



Manual:	Select the option button and enter the *Bluetooth* address in full. All EUTs must have the same *Bluetooth* address in order to use this option.
Obtain Via EUT RS232 Control:	If this option is selected, the EUT address is obtained over an RS232 cable that has been connected between the "EUT Control" port on the front of the MT8852B and the HCI connector on the EUT. The "Baud Rate" setting must also be made when using this setting. With this option, the EUT addresses can be either the same or different.
Obtain Via EUT USB Control:	If this option is selected, the EUT address is obtained over an USB cable that has been connected between the "EUT Control" port on the front of the MT8852B and the HCI connector on the EUT. With this option, the EUT addresses can be either the same or different.
Inquiry Mode:	In this mode, the *Bluetooth* address is acquired by inquiry when the user attempts to run a test. If "Inquiry Mode" is selected, the timeout and number of inquiry responses can also be specified. With this option, the EUT addresses can be either the same or different.

Note: The corresponding settings at the MT8852B interface can be found by pressing the **[EUT addr]** soft key.

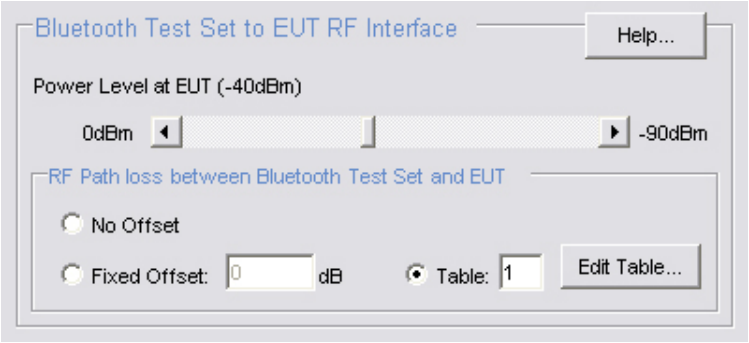
6. Select the authentication setup check box if the EUT requires authentication to make a connection. Select the appropriate pin length (1 to 16) and enter the pin used in the authentication process.



7. Use the horizontal scroll bar to specify the time for which the test set will attempt to communicate with the EUT even when no response is received. This item can be set to a value between 1 and 40, with a recommended setting of 10 seconds. Transmission is stopped if the specified time period is reached.

8. Use the horizontal scroll bar to specify the power level at which commands are sent from the MT8852B to the EUT. The transmission power can be set to a value between 0 and -90 dBm.

Note: The corresponding settings at the MT8852B interface can be found by selecting the script number and then pressing the **[Setup]** soft key.



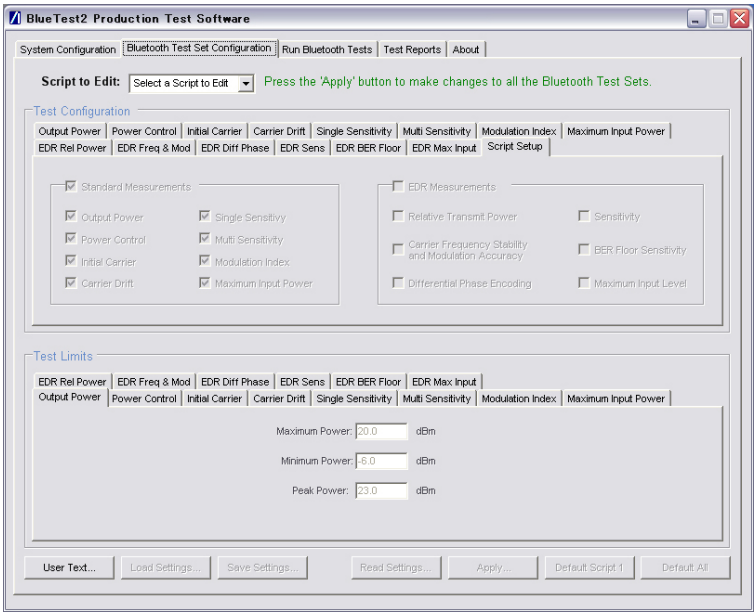
9. A path offset can also be specified in this area of the window. Select “Fixed Offset” and enter the offset value in the adjacent entry field. Alternatively, select “Table” and click the adjacent [Edit Table] button to specify the loss for each channel as required.

Note: The corresponding settings at the MT8852B interface can be found by selecting the script number and then pressing the **[Setup]** soft key. The “Path offset” and “Fixed offset” settings are on page 3 of 3.

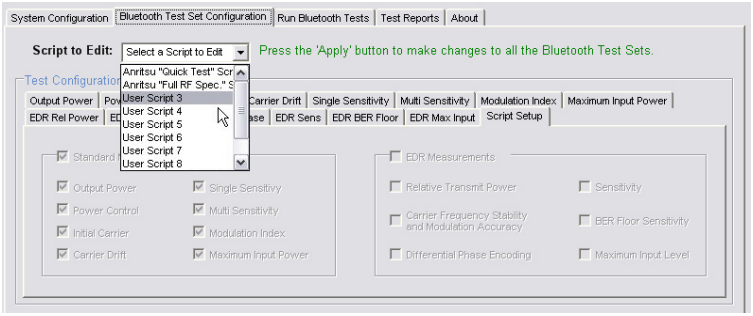
Chapter 6. Making Script and Test Limit Settings

With the basic configuration settings complete, the user can now proceed with specific script related settings.

1. Click the [Bluetooth Test Set Configuration] tab to display the page shown below.



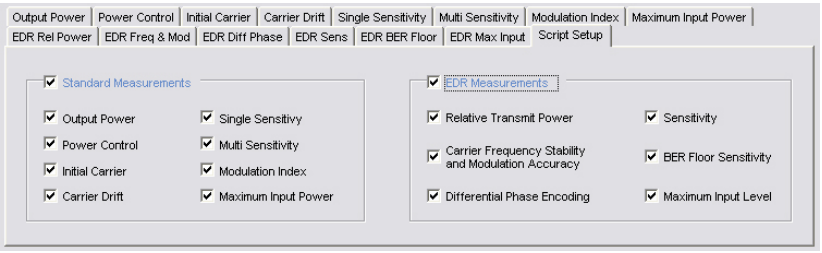
2. Select the script to be run from the “Script to Edit” drop down list.



3. On the first occasion a script to be run is chosen from the drop-down list, the script settings are automatically read into BlueTest2 from MT8852B. If there are multiple test sets in the line, the settings are read from test set 1. When a script is selected on subsequent occasions, a message displays asking the user if they wish to read the settings for the selected script from the MT8852B. If [Yes] is selected at this point, and there are multiple test sets in the production line, a further message displays asking the user to specify the test set from which the settings are to be read. With this done, the tests and test limits settings will now match those at the selected unit.

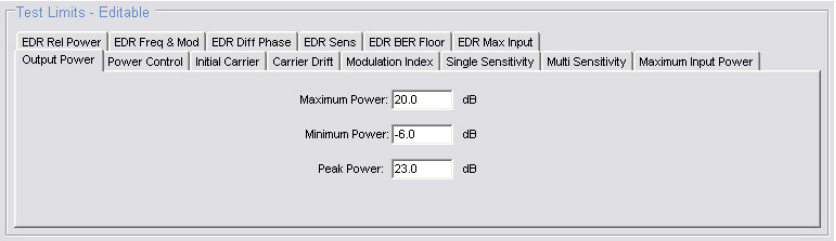
4. Make changes as required to the tests in the script.

   Select the tests to be executed as required, or click the check box next to the group title to select all standard or EDR tests simultaneously. When the script and the tests to be run have been selected, a tab then becomes available for each of the selected tests. Click any of the available tabs and make changes to the test settings as required.



Note: The settings on any of the test pages correspond to pages 1 and 2 that display by selecting the test in question at the MT8852B interface and pressing the **[Setup]** soft key. Users should refer to the operation manual for an explanation of the items in this section.

5. The lower half of the Bluetooth Test Set Configuration] tab corresponds to the settings that are accessed at the test set by pressing the **[Limits]** soft key. Make any changes necessary and refer to the operation manual for item explanations.



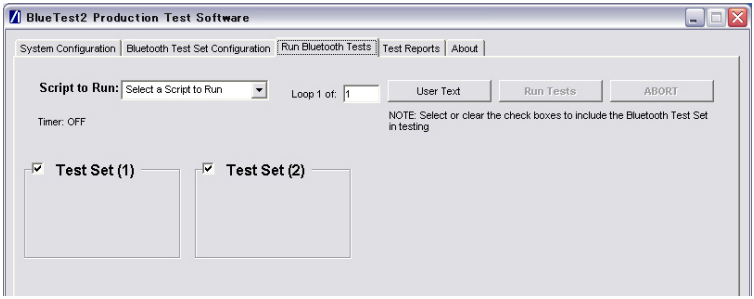
6. Use the buttons at the bottom of the tab to apply and read settings as required.

[User Text]	Allows the user to enter additional information for inclusion in the test report.
[Load Settings]	Click to import script settings previously saved with the [Save Settings] script.
[Save Settings]	Click to save the current script settings to a file.
[Read Settings]	Changes made to one of the test sets in the line can also be read to the BlueTest2 Software. To do this, click [Read Settings] and then select the number of the test set from which the settings will be read. If required, the procedure below can then be used to copy these settings to all the units in the line.
[Apply]	Click [Apply] to apply any changes made to the test sets in the line. When [Apply] is clicked, the user must then specify the script to which the changes will be applied. Specify the script and click [OK] to see an immediate change at all test sets. If the user attempts to display a different tab without first applying the changes made, a message displays to confirm whether the changes made should now be applied. If the changes are not applied at this stage, any tests run will be based on the setup at the MT8852Bs in the line and may not reflect the settings at the BlueTest2 window.
[Default Script]	Click [Default Script] to change the settings for the selected script to the default values and settings at all the MT8852Bs in the line.
[Default All]	Click [Default All] to change the settings for all the scripts to the default values and settings at all the MT8852Bs in the line.

Chapter 7. Running the Tests

1. Press the [Run Bluetooth Tests] tab to display the page shown below.

   Each test set in the line is represented in this window by a delineated box with a sequential number in parenthesis ([1] to [16]) for each of the MT8852Bs.



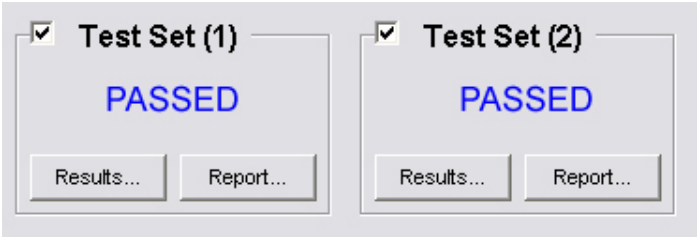
Note: The appearance of this screen changes to reflect the number of MT8852Bs in the line. The screen shot above shows a setup with two units in the line.

2. Select a script from the “Script to Run” drop down list. When a script is selected the [Run Tests] button becomes available.
3. Select or clear the check box next to the title of each boxed area to indicate whether the test set in question is to be used in testing.
4. Enter the number of test loops to be run at the “Loop 1 of:” text box. A value can be entered within the range of 1 and 9999.
5. With the check boxes selected or cleared as required and the script selected, click [Run Tests] to commence testing.

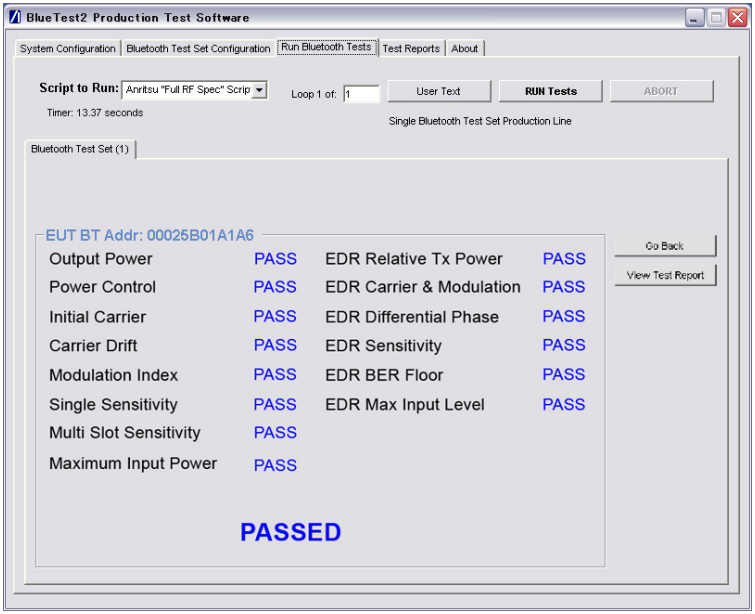
Chapter 8. Results and Reports

Checking the Test Results

When the tests are complete, a result such as “PASSED” or “FAILED” displays within the boxed area for each set. The script will be assigned a FAILED status if any of the tests run within that script failed.



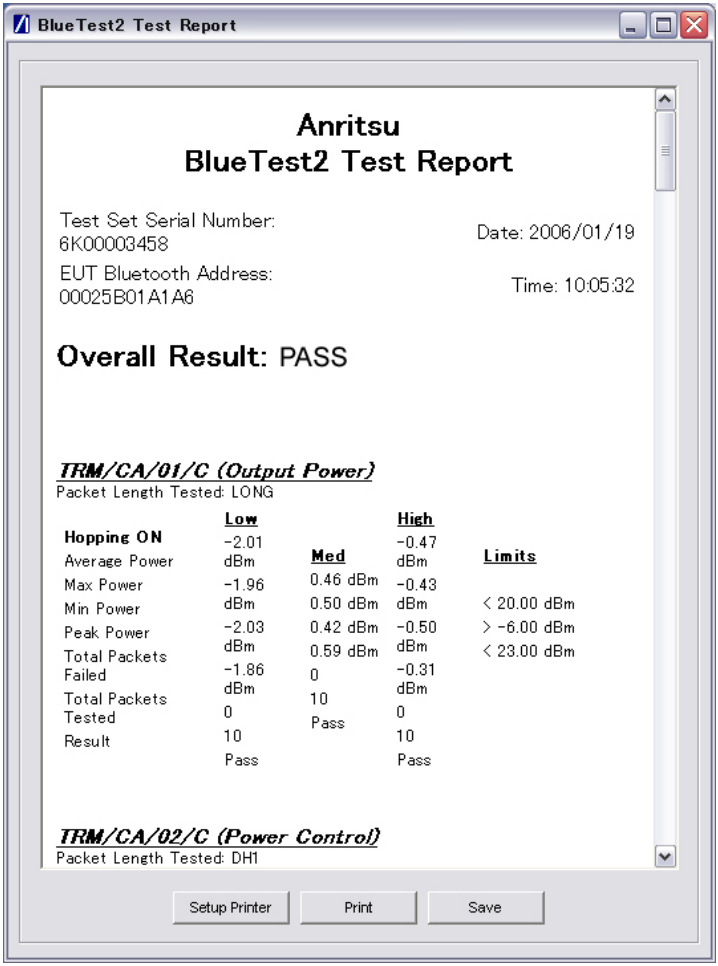
To check the individual pass or failure status for specific tests, click the [Results…] button to display a window such as that shown below.



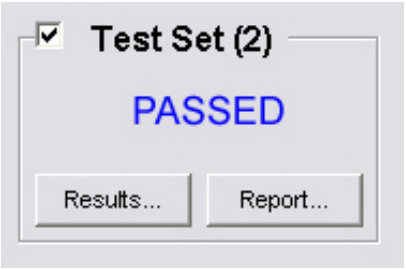
The time that the selected script took to complete displays in the window above directly beneath the “Script to Run” entry field. The time is counted from the moment that a connection is made to the moment that the script is complete and the CMP flag is raised. The timer feature is available only when running single production line testing with a loop setting of 1.

Viewing a Test Report

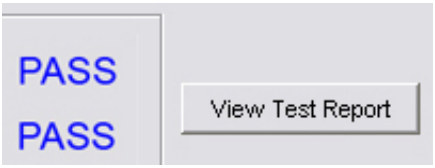
There are three ways in which the user can view a print formatted report such as that shown below.



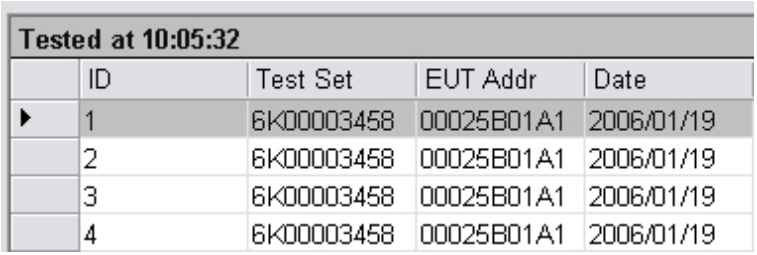
- Click the [Report…] button for the test set in question.



- Click the [View Test Report] button made available after clicking the [Results…] button.



- Click the [Test Reports] tab and double-click the data line for the required script from the list of all the reports available in the database.

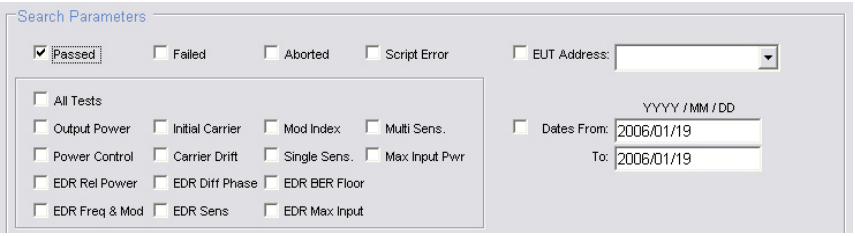


Tested at 10:05:32

	ID	Test Set	EUT Addr	Date
▶	1	6KD0003458	00025B01A1	2006/01/19
	2	6KD0003458	00025B01A1	2006/01/19
	3	6KD0003458	00025B01A1	2006/01/19
	4	6KD0003458	00025B01A1	2006/01/19

Filtering the Report List

There are several search parameters available on the [Test Reports] tabbed page that can be used to filter the data that displays in the record list. The options available on this page are detailed below.



Passed	Select to display only records of scripts in which all of the tests were passed. With the "Passed" check box selected, the user can then select from the test boxes below to filter the data further to only include scripts in which the selected test was passed.
Failed	Select to display only records of failed scripts (i.e., one or more of the tests in the script ended in a failure). With the "Failed" check box selected, the user can then select from the test boxes below to filter the data further to only include scripts in which the selected test was failed.
Aborted	Select to display only records of scripts that were aborted by the user. A script can be aborted at any time by clicking the [Abort] button on the [Run Bluetooth Tests] tab.
Script Error	Select to display only records of scripts that were not completed due to a problem at the EUT.
EUT Address	Select to display only records of scripts for a specific *Bluetooth* address. The address must be entered in full or can be selected from the drop-down list.
Dates	Select the check box and enter a time period using the "From" and "To" text boxes.

To view any of the test script reports, simply double-click on the cell to the left of the ID number in the table.

Managing the Report Data

There are three buttons on the [Test Reports] tabbed page to manage the report data in the database.

Refresh	Click to update the list of reports displayed. Periodic updating of the list is advisable during idle periods, especially if the test results database has been moved to a central server being used by more than one production line.
Select All	Click to select all the reports in the list. Reports can be removed from the selection by holding down the [Ctrl] key and clicking the extreme left column of the data line in question.
Delete	Click to delete the selected reports. Multiple reports can be selected by clicking on the required lines in the table whilst holding down the [Ctrl] key.

Appendix A. GPIB Setup

The following GPIB driver configuration setup is recommended for reliable GPIB communication with the MT8852B *Bluetooth* Test Set. The setup is expressed in the terms used by the National Instruments GPIB ISA and PCI cards and drivers for Windows and DOS.

For details of how to set up and configure the National Instruments GPIB card, refer to the installation information supplied with the card itself.

GPIB Device Template

The MT8852B default primary address is 27. Separate device templates for the primary address of each device can usually be set up separately. The settings for the device template for the MT8852B are:

Terminate read on EOS:	NO
Set EOI with EOS on write:	YES
Type of compare on EOS:	8 bit
EOS byte:	0x0A (10 decimal)
Send EOI at end of write:	YES
Readdressing:	YES
Secondary address:	NONE

GPIB PCII/IIA Properties

The recommended GPIB card settings for use with the MT8852B are:

Terminate read on EOS:	NO
Set EOI with EOS on writes:	YES
Type of compare on EOS:	8 bit
EOS byte:	0x0A (10 decimal)
Send EOI at end of write:	YES
System controller:	YES
Assert REN when SC:	YES
Enable Auto Serial polling:	NO
NI card. Cable length for HS488:	OFF

GPIB PC Card Hardware Settings

Address: PCIIA 021E(Hex) or PCII 02B8(Hex)

Interrupt: 7 (This can be set to any digit from 1 to 7. Choose unused interrupt.)

DMA (Direct Memory Access): None (remove jumpers from PC card).

Appendix B. BlueTest2 Source Code

Users may edit the BlueTest2 source code in order to add functionality or to make it more suitable for their requirements.

Note: Making changes to the source code is not recommended unless the user is familiar with Visual Basic.NET and the .NET Framework. It should also be noted that Anritsu can offer no support for customer modified versions of this product.

The source code files are stored in the [BlueTest2 Source Code] folder at the location where the BlueTest2 program was installed. Users with Microsoft Visual Basic Net version 2003 or later installed on the BlueTest2 PC can directly call up the BlueTest2 project by selecting “Anritsu BlueTest2.vbproj” from the [BlueTest2 Source Code] folder.

Breakdown of the Visual Basic Code

Forms

AssemblyInfo	Displays information about the product such as the product and company name and the version details.
frmDeleteRecord	Displays a progress bar for deleting reports.
frmInquiryAsk	Displays a list of Bluetooth addresses.
frmMain	The main form.
frmReport	Displays the main report data.
frmSplash	The "splash" screen on startup.
getUserText	Displays a text entry box for additional test information.

Modules

Module1	The module containing the main functions.
TabOrderManagaer	The module used to set the tab order of the application.
NIGLOBAL	National Instruments GPIB required module.
Vbib-LI	National Instruments GPIB required module.
Stopwatch	The module used to perform time measurements.

Anritsu

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