Ansur QA-ES plug-in
Version 1.4.3

User Manual

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1 Getting Started

1.1 Introduction

Ansur Test Automation Software is the evolution of the PRO-Soft software family and will become the backbone of all Fluke Biomedical test systems in the future. Ansur is a test executive that handles all steps of your test procedures by allowing a mixture of manual/visual tests and automated test sequences. The software is designed to work hand-in-hand with Fluke Biomedical analyzers and simulators as an application where visual inspections, preventative maintenance procedures, performance tests, and safety tests for any device can be performed and stored from one file. The test procedures are stored in Test Template or Test Sequence files (XML format) and the results are stored in Test Result files (also in XML format), which may be viewed and printed with three different detail levels.

The Ansur QA-ES plug-in, supported on the Ansur software, provides remote access to all functionality of the QA-ES Electrical Electrosurgical Analyzer. There is a unique Ansur QA-ES test element for each of the measurements available at the QA-ES Electrical Electrosurgical Analyzer. The capabilities and use of the QA-ES Electrical Electrosurgical Analyzer are fully explained by its user manual (see reference 1).

This manual is designed to assist the reader in the basic procedures for using the Ansur QA-ES plug-in within the Ansur executive. It covers all features specific to the full QA-ES plug-in. Familiarity with the Ansur software is assumed (see reference 2) as is familiarity with Microsoft Windows (see reference 3) and its features

1.2 System requirements

The following are recommended minimum requirements for installation:

- IBM PC/XT-compatible Pentium II 350MHz or faster processor
- 128Mb ram
- 50Mb of unoccupied hard drive for software
- Hard drive space for result and template files
- 32 bit Microsoft Windows operating system (98SE/Me/NT/2000/XP/VISTA)

1.3 About your manual

This manual is designed to assist you in the basic procedures for using the QA-ES plug-in.

Familiarity with Microsoft Windows and its features is assumed. If you are unfamiliar with it, we recommend that you use your *Microsoft Windows User's Guide* along with this manual.

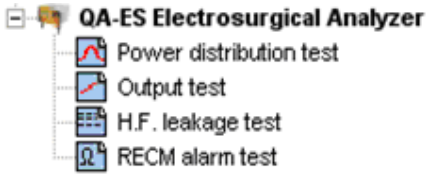
This manual contains the following conventions:

This	Represents
Bold title case	Menu items and control buttons that can be selected to perform operations. The underline (_) represents the shortcut key. For example, "Select File, Save" instructs you to press "File", then press "Save". The comma (,) between selections indicates that both selections are to be made in sequence.
(Key 1 + Key 2) or "F< >"	Shortcut keys. The plus (+) sign indicates that both keys are to be pressed simultaneously. For example, "(CTRL + P)" instructs you to press "Control" and hold it down while pressing "P".
< braces >	Text information that must be specified and entered manually by the operator.
CAPITALS	File names and paths. For example, "DUTINFO.INI".

2 Introducing the QA-ES plug-in

2.1 Test elements

After installing the QA-ES plug-in the QA-ES Performance tests will be added to Ansur's Test Explorer as shown below. Appendix A lists all performance tests available in the QA-ES plug-in.



Each performance test is indicated with a light blue icon. Each performance test element utilizes measurements available at the QA-ES Electrosurgical Analyzer.

2.2 Test Element Definition.

Each test element is defined by the usual Ansur method. **Custom Setup** and **Expected Results** dialog boxes join the familiar **General Setup** and **Apply When** dialog boxes.

2.2.1 Custom Setup Dialog Box

This dialog box enables the user to place limitations on how the test element is performed both on the hardware and software configurations.

2.2.2 Expected Results Dialog Box

This dialog box contains the acceptable range that the test element must adhere to in order for it to pass. No international standards are included with the plug-in and there is no facility for referenced limits.

The following chapters will detail the definition and use of each of the four performance test elements.

3 Power Distribution Test Element

3.1 Introduction

Within this test the user has the opportunity to determine the power performance of an ESU over a desired range of loads across its electrodes.

The user must define a desired power value with a specific load for every power measurement to be made. This is achieved through the **custom setup** dialog.

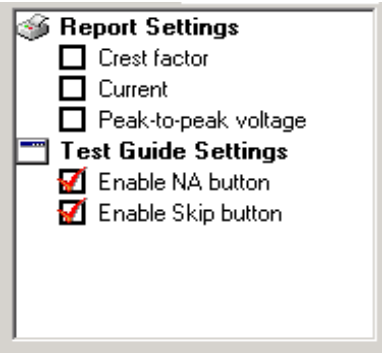
The user must also define the acceptable deviation to the desired power performance, facilitated on the **expected results** dialog.

If one measurement fails to meet these limits then the test will fail.

3.2 Custom setup

3.2.1 Software Settings

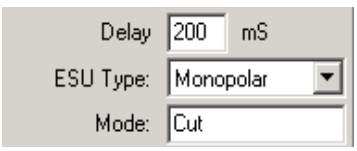
The software settings are displayed in the left of the **custom setup** dialog.



Enable Skip Button	If set to False the Skip button in the Test Guide (see section 7.1) for this test will be disabled.
Enable NA Button	If set to False the NA button in the Test Guide (see section 7.1) for this test will be disabled.
Report Crest Factor	The measured crest factor to be shown in the final report.
Report Current	The measured current to be shown in the final report.
Report Peak-to-peak voltage	The measured Peak-to-peak voltage to be shown in the final report.

3.2.2 Hardware Settings

The hardware settings are defined in two distinct parts. The first of these is found on the left of the **custom setup** dialog within the **test settings** box.

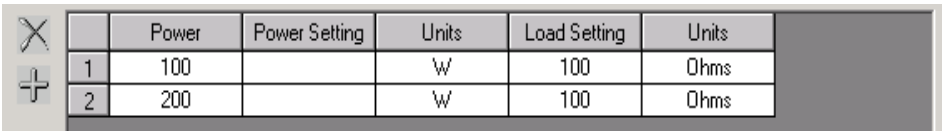


Delay This is the delay between the changing of the loads and taking a power measurement.

ESU Type This is the type of ESU under test.

Mode Defines the mode that the ESU is to be in. The mode determines the type of waveform applied to the electrodes.

The second part is found on the right of the **custom setup** dialog within the **test details** box.



	Power	Power Setting	Units	Load Setting	Units
1	100		W	100	Ohms
2	200		W	100	Ohms

This determines the number and range of load measurements to be taken. Each line defines each individual load setting and its desired power for a single performance measurement. The toolbar allows addition and deletion of individual settings. If the ! symbol appears then that particular measurement setting is invalid.

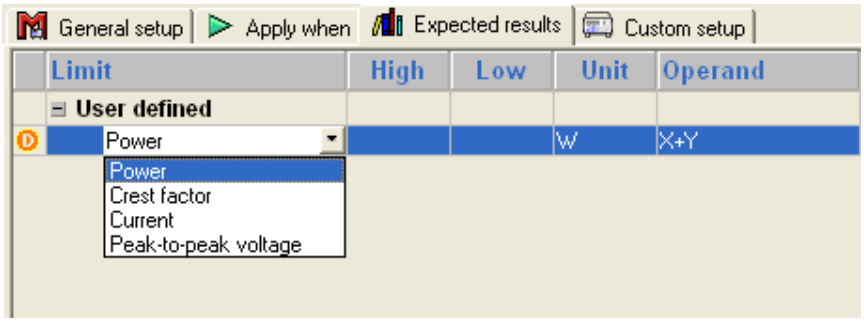
Power This is the power value on the ESU required for the test. Each load setting will have a unique power value. Naturally this is the expected power measurement.

Power Setting An optional entry that gives the dial setting appropriate to the power value.

Load Setting This is the load value for when taking a single power output measurement.

3.3 Expected Results

Every measurement returns a power, current, crest factor and voltage peak-to-peak value and so limits can be placed against any of them. A drop down list enables the user to choose the value for which the limit applies (see below). Limits can be added or deleted against a standard by right clicking the mouse control when the pointer is over a limit. The returned value must always be within the upper and lower limit, where stipulated, for the complete test.

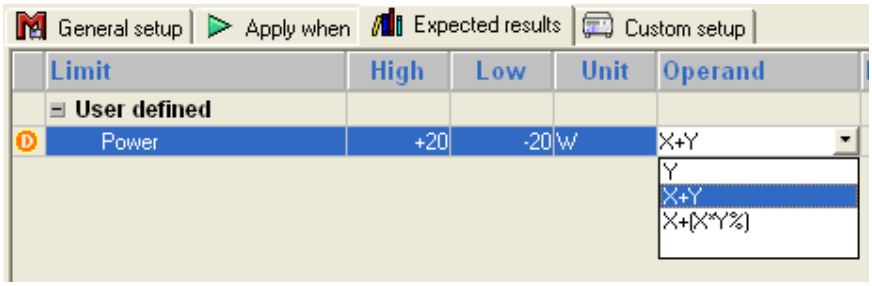


The exception is the power value. The user defined power value in the **test details** box against each measurement is the desired value, naturally. The limits define the acceptable range around this desired power value.

Use the Operand menu to select how Ansur shall calculate the limit given according to the power values defined in the test details. The operand can be set to:

- Y – absolute value,
- X + Y – limit calculated as defined power value + specified limit, or
- X + (X * Y%) – limit calculated as a percentage deviance from the defined power value.

So for the example below, each power performance measurement must be +/-20 W of its defined power value.



4 Output Test Element

4.1 Introduction

Within this test the user has the opportunity to determine the power performance of an ESU over a desired range of power values with a constant load across its electrodes.

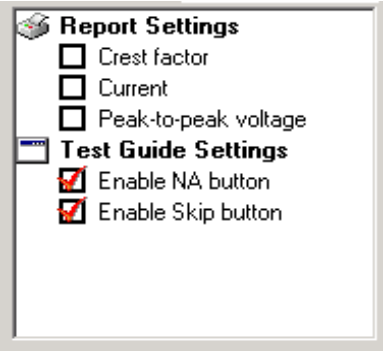
The user must define a desired power value for every power measurement to be made. This is achieved through the **custom setup** dialog.

The user must also define the acceptable deviation to the desired power performance, facilitated on the **expected results** dialog. If one measurement fails to meet these limits then the test will fail.

4.2 Custom setup

4.2.1 Software Settings

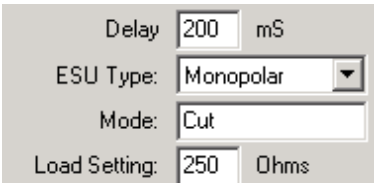
The software settings are displayed in the left of the **custom setup** dialog.



Enable Skip Button	If set to False the Skip button in the Test Guide (see section 7.1) for this test will be disabled.
Enable NA Button	If set to False the NA button in the Test Guide (see section 7.1) for this test will be disabled.
Report Crest Factor	The measured crest factor to be shown in the final report.
Report Current	The measured current to be shown in the final report.
Report Peak-to-peak voltage	The measured Peak-to-peak voltage to be shown in the final report.

4.2.2 Hardware Settings

The hardware settings are defined in two distinct parts. The first of these is found on the left of the **custom setup** dialog within the **test settings** box.



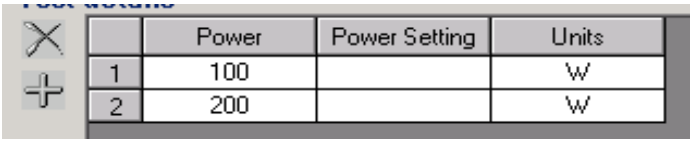
Delay This is the delay between the changing of the loads and taking a power measurement.

ESU Type This is the type of ESU under test.

Mode Defines the mode that the ESU is to be in. The mode determines the type of waveform applied to the electrodes.

Load Setting This is the constant load value for when taking every power output measurement.

The second part is found on the right of the **custom setup** dialog within the **test details** box.



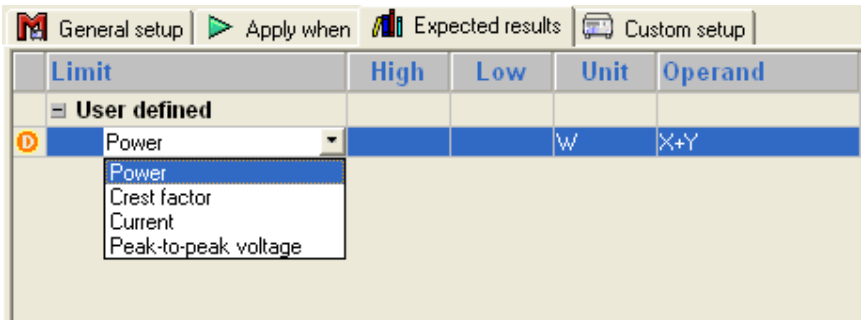
This determines the number and range of power measurements to be taken. Each line defines a desired power value for a single performance measurement. The toolbar allows addition and deletion of individual settings. If the ! symbol appears then that particular measurement setting is invalid.

Power This is the power value on the ESU required for the test. Each load setting will have a unique power value. Naturally this is the expected power measurement.

Power Setting An optional entry that gives the dial setting appropriate to the power value.

4.3 Expected Results

Every measurement returns a power, current, crest factor and voltage peak-to-peak value and so limits can be placed against any of them. A drop down list enables the user to choose the value for which the limit applies (see below). Limits can be added or deleted against a standard by right clicking the mouse control when the pointer is over a limit. The returned value must always be within the upper and lower limit, where stipulated, for the complete test.

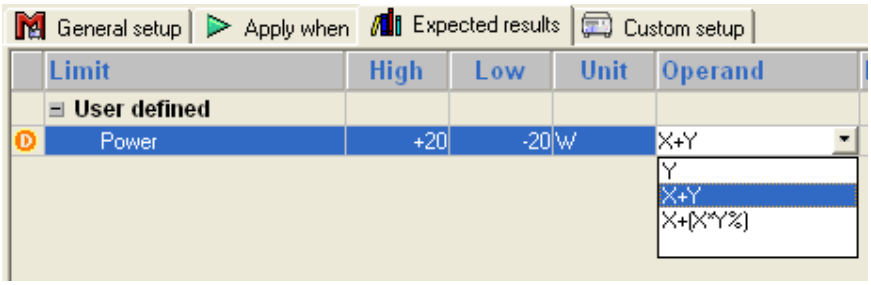


The exception is the power value. The user defined power value in the **test details** box against each measurement is the desired value, naturally. The limits define the acceptable range around this desired power value.

Use the Operand menu to select how Ansur shall calculate the limit given according to the power values defined in the test details. The operand can be set to:

- Y – absolute value,
- X + Y – limit calculated as defined power value + specified limit, or
- X + (X * Y%) – limit calculated as a percentage deviance from the defined power value.

So for the example below, each power performance measurement must be +/-20 W of its defined power value.



5 H.F. Leakage Test Element

5.1 Introduction

This test checks to see whether all electrodes on an ESU have leakage currents within acceptable limits over a range of power and load settings.

To complete this test measurements are taken, one for each electrode, each with a different set-up. These set-ups will depend on whether the ESU is grounded or isolated (see reference 1 for details). All H.F. leakage current measurements within the Ansur test element will be taken for one electrode prior to being run on the next.

The user must define a power value with a dedicated load and with a dedicated mode for every leakage measurement to be made. This is achieved through the **custom setup** dialog.

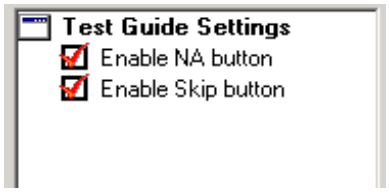
The user must also define the acceptable leakage range for each electrode type, facilitated on the **expected results** dialog.

If one measurement fails to meet these limits then the test will fail.

5.2 Custom setup

5.2.1 Software Settings

The software settings are displayed in the left of the **custom setup** dialog.

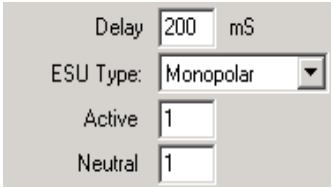


Enable Skip Button If set to False the Skip button in the Test Guide (see section 7.1) for this test will be disabled.

Enable NA Button If set to False the NA button in the Test Guide (see section 7.1) for this test will be disabled.

5.2.2 Hardware Settings

The hardware settings are defined in two distinct parts. The first of these is found on the left of the **custom setup** dialog within the **test settings** box.



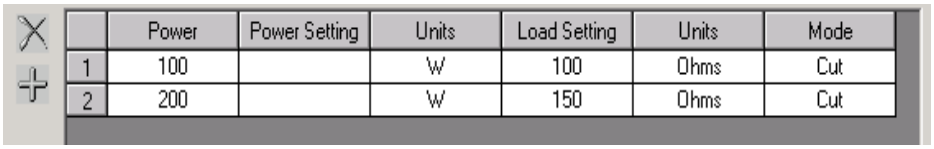
Delay This is the delay between the changing of the loads and taking a power measurement.

ESU Type This is the type of ESU under test.

Active The number of active electrodes at the ESU.

Neutral The number of neutral electrodes at the ESU.

The second part is found on the right of the **custom setup** dialog within the **test details** box.



	Power	Power Setting	Units	Load Setting	Units	Mode
1	100		W	100	Ohms	Cut
2	200		W	150	Ohms	Cut

This determines the number of leakage measurements to be taken. Each line defines a power value, load across the electrodes and mode for a single HF leakage measurement. The toolbar allows addition and deletion of individual settings. If the ! symbol appears then that particular measurement setting is invalid.

Power This is the power value on the ESU required for the test.

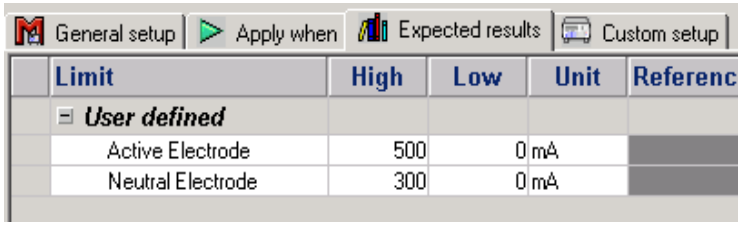
Power Setting An optional entry that gives the dial setting appropriate to the power value.

Load Setting This is the load used when measuring the leakage current.

Mode Defines the mode that the ESU is to be in. The mode determines the type of waveform applied to the electrodes. This is never set remotely.

5.3 Expected Results

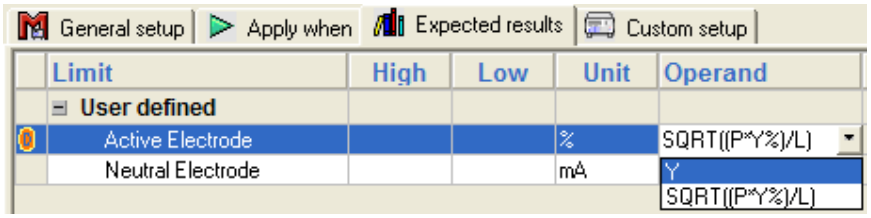
ESU devices that have BF or Monopolar electrodes will require two limits for each standard as demonstrated below.



ESU devices that have bipolar electrodes need just one set of limits for each standard.

The values are the absolute values that all leakage measurements must adhere to in order to pass. If one measurement fails so the whole test is deemed to have failed.

It is also possible to specify the limits as a percentage of the Power defined in the **test details** dialog box. The limit will then be calculate as $I = \sqrt{((Y\% * P) / R)}$, where Y is the value entered in **Expected Results**, and P and R are the Power and Load defined in **test details**. Use the Operand menu to select this limit.


General setup
Apply when
Expected results
Custom setup
Limit
High
Low
Unit
Operand
User defined
Active Electrode
%
SQRT((P*Y%)/L)
Neutral Electrode
mA
Y
SQRT((P*Y%)/L)

6 RECM Alarm Test Element

6.1 Introduction

This test ensures that the ESU will sound an alarm if the resistance between the two electrodes exceeds a specified limit. The QA-ES will gradually increase the resistance, starting at 10 Ohm and increasing through all available load settings. At a certain value, the ESU should sound an alarm. It is this value that will be returned.

The user must define the acceptable alarm level through the **expected results** dialog. On this comparison the test will either pass or fail.

6.2 Custom setup

6.2.1 Software Settings

The software settings are as section 5.2.

6.2.2 Hardware Settings

The hardware settings are found on the left of the **custom setup** dialog within the **test settings** box.

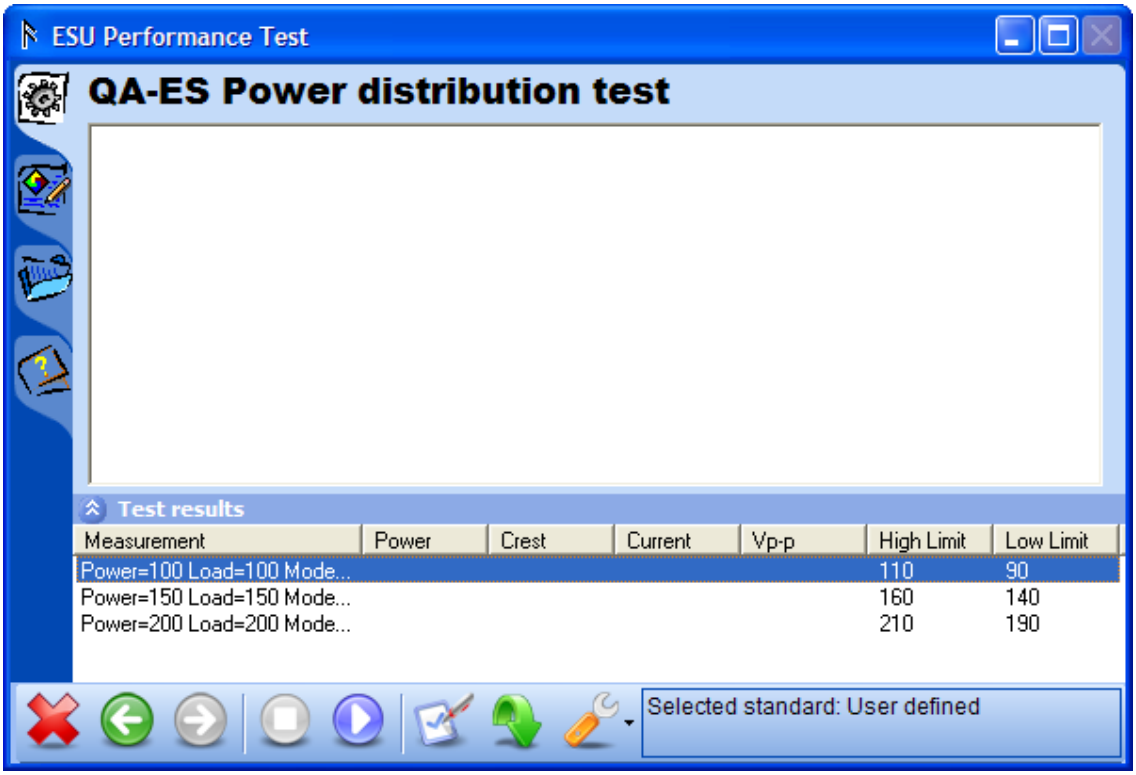
Delay This is the time between the loads being applied to the ESU.

6.3 Expected Results

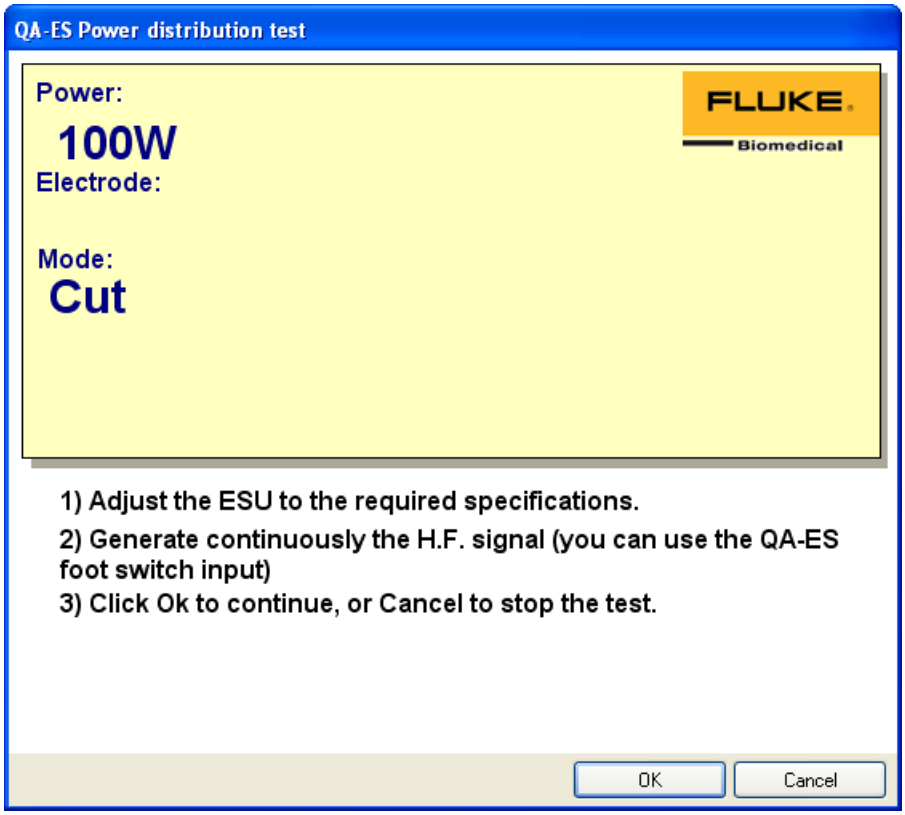
This performance test will contain the acceptable upper limit for the alarm to trigger.

7 Test Guide

The test guide is the users interface with the QA-ES during the running of the test template.



Prior to each measurement within a test the software will display a prompt for the user to set the power, set the mode and set up the next electrode as desired by the particular test.



If the setup is identical between two measurements, or when running an RECM Alarm test, this prompt will not be displayed.

7.1 Toolbar buttons

	**Abort**	Abort the test template.
	**Previous**	Go to previous dialog screen.
	**Next**	Go to next dialog screen.
	**Start**	Perform test.
	**Stop**	Stop test.
	**Not applicable**	Flag test as not applicable.
	**Skip**	Skip test and go to next.
	**Additional features**	Allows access to standards and customize toolbar menu.

Appendix A.
QA-ES Performance Tests

The following table lists all performance tests provided by the QA-ES plug-in.

Performance test	Unit
Power Distribution Test	W
Output Test	W
H.F. Leakage Test	mA
RECM Alarm Test	Ohms

Appendix B.
Retrieving updates

Updates for Ansur are published from Fluke Biomedical's web pages

- http://www.flukebiomedical.com

Appendix C. References

Ref.	Title	Author	Version
1	QA-ES User & Service Manual	Fluke Biomedical.	1.30-2
2	Ansur Test Executive User Manual	Fluke Biomedical	2.6.0
3	Microsoft Windows User's Guide.	Microsoft	