

**PART B**

**APPROVAL SPECIFICATION**

**FOR**

**OPERATIONAL TESTING OF**

**WARM WATER GENERATING SYSTEMS NOT**  
**INCORPORATING THERMOSTATIC MIXING**  
**VALVES**

**FOR USE IN**

**NON DOMESTIC BUILDINGS**

**IN**

**NEW SOUTH WALES**

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## **(A) INTRODUCTION**

The Public Health Regulation, 2012, Part 2, – Legionella Control, Clause 6(4) requires that “ *A warm-water system must not be installed in a hospital unless it is of a kind approved in writing by the Director-General.*”

To allow new warm water systems to be approved, the Ministry has adopted the following test criteria which must be met in order to be considered for approval

This Specification denotes the minimum requirements for the test methods and acceptance criteria for warm water generating systems not incorporating thermostatic mixing valves.

## **(B) GENERAL**

All warm water systems shall:

1. have relevant current product certification complying with current QAS authorisation to SAA MP52.; and
2. when installed and commissioned in accordance with the supplier’s instructions be shown by certified testing to be able to provide thermal shut-off over at least the extremes of the working range of inlet water temperatures and pressures (see Section 6 of this Specification ) and also the minimum flowrate of warm water for the product (stated by the supplier in product literature) whilst meeting the safe water temperature requirements specified in Part 2.7 of the relevant Ministry of Health Policy Directive
3. Have supplier’s literature complying with requirements of
  - 3.1 legislation applicable in NSW,
  - 3.2 current NSW Ministry of Health publications including the “Requirements for the provision of cold and heated water”,
  - 3.2 The Plumbing Code of Australia
  - 3.3 in respect of thermostatic mixing valves – the “HOSPLAN Code of Practice for Thermostatic Mixing Valves for Use in Health Care Facilities in NSW”, as applicable and
  - 3.4 AS/NZS 3500, AS/NZS 3666, AS 4032 (in respect of thermostatic mixing valves) and other relevant Australian & International Standards.

**(C) CERTIFICATION**

All tests required to be carried out pursuant to section 2 above of this specification shall be witnessed and the test results shall be certified by a person from an independent testing organisation which is registered or accepted by the National Association of Testing Authorities of Australia. Alternatively, the tests shall be undertaken and certified by an independent laboratory which is registered or accepted by the National Association of Testing Authorities of Australia or recognised and accepted by NATA.

**(D) INDEPENDENT CERTIFICATION**

The application for type approval of the warm water generating system shall be certified in writing as complying with the above requirements 1 to 3 inclusive, by an independent person to be nominated by NSW Ministry of Health (Independent Certifier) from either of those listed in Form 2 at the end of this document. The costs for this certification shall be met by the manufacturer / applicant. The application for the type approval shall be accompanied by a certified copy of all documents evidencing compliance with the above requirements 1 to 3 inclusive.

**(E) MINISTRY OF HEALTH APPROVAL**

The application form attached (Form 1) and the Certificate (Form 2) shall be completed and be accompanied by the current prescribed fee of \$120.00 (See Clause 6(4) of the Public Health Regulation 2012.

The cheque shall be made payable to "*Ministry of Health*" and be sent to the NSW Ministry of Health, PO Box 201, Wagga Wagga, NSW, 2650.

The applicant shall be advised in writing of any Ministry of Health approval and conditions of approval, if any.

The relevant contact person shall be:

Tony Burns  
Legionella Consultant  
Ph (02) 69339120 Fax (02) 69339129  
Mob 0428 693 374

## 1. INTRODUCTION

1.1. This Specification denotes the minimum requirements for the test methods and acceptance criteria for warm water generators other than thermostatic mixing valves, produced by the Manufacturer.

1.2. All Operational Tests shall be carried out. NSW Ministry of Health is prepared to consider comprehensive test reports for any equivalent operational tests that the Manufacturer / Applicant may have already had carried out over and including the extremes in the range of operating conditions stated in the Manufacturers' published instructions, with such tests being carried out either by or under the direct supervision and control of an Independent Testing Body accredited with a Testing Authority endorsed or recognised by NATA

1.3. Additional tests under other conditions of operation may also be undertaken at the option of the Manufacturer.

1.4. The purpose of these tests is primarily to assess the thermal shut-off and temperature stability functions of the respective model, type and size of warm water generator offered by the Manufacturer / Applicant.

1.5. The manufacturer shall become familiar with all the requirements of this Specification before preparing the test specification. Particular attention is drawn to the documentation procedures outlined in this Specification.

1.6. The requirements of this Specification shall apply unless amended and advised beforehand in writing by NSW Ministry of Health.

1.7. NSW Ministry of Health would welcome and appreciate receiving any comments which would help enhance the application and use of this Specification to help ensure the safety of the end user of a warm water generator.

## 2. DEFINITION OF TERMS

For the purposes of this Specification, the following definitions shall apply unless otherwise stated in the text:-

2.1. Warm Water Generator- a standard commercial product other than a thermostatic mixing valve, that is suitable for the intended purpose and can automatically generate warm water from cold water and also control the temperature of the warm water.

2.2. Manufacturer –the firm manufacturing the warm water generator or the authorised agent of such manufacturer.

2.3. Manufacturers' Test Specification –the specification developed by the Manufacturer after consultation with the Independent Testing Body.

2.4. Independent Testing Body –the independent testing laboratory or organisation who will either supervise or conduct the tests (as applicable) and record the results all in accordance with the test specification. Such independent testing body shall be accredited with a national testing authority. The testing body shall be one that is experienced and qualified to test taps, valves and other similar hydraulic or plumbing fittings.

2.5. Testing Authority –the national association or government body responsible for administering an accreditation system and determining the conditions to be complied with by testing laboratories, particularly the standards in regard to staff, equipment and laboratory practice all as indicated in standards.

2.6. Endorsed –stamped and signed by the applicant.

2.7. Test Engineer –the authorised representative of the Manufacturer.

2.8. Observer –the authorised representative of the Independent Testing Body.

2.9. Independent Certifier – the person certifying the documentation to accompany the application for approval. That person shall be competent in this field of building engineering services.

2.10. Thermal Shut Off – a term used to describe the function of a warm water generator in promptly and automatically either shutting off or significantly reducing the flow of water, should either (i) the cold water supply to the warm water generator be inadequate or be interrupted or (ii) there is a malfunction of the product that is covered by the operation and maintenance manual for the product. The objective of this test is to avoid the risk of scalding occurring to the end user.

2.11. Applicant - means the person / organisation applying for the approval of the warm water generator.

2.12. Warm Water - potable water within the temperature range of 40.5 to 43.5 °C as measured at an ablution outlet fixture e.g. bath tap.

2.13. Shall - is to be understood to be mandatory

### 3. PROCEDURAL MATTERS

3.1. Besides any other procedural matters that may be required by the Independent Testing Body, the following requirements shall also apply.

3.2. The Independent Testing Body shall be selected by the Manufacturer / Applicant after consultation with the Testing Authority. The manufacturers' test specification shall be prepared by the Manufacturer / Applicant in consultation with the Independent Testing Body.

3.3. Tests covered by this Specification, will at the expense and option of the Manufacturer / Applicant, be carried out either at the works of the Manufacturer / Applicant or at a location agreed with the independent testing body and in each case under the direct control and supervision of the Observer. Each test shall be either carried out by the Test Engineer and be observed and witnessed by the Observer or carried out by an independent test body at their laboratory. The particulars of the mixing valve being tested and the results of all tests shall be entered in the respective log sheet by the Observer. Each log sheet shall be signed by the Test Engineer and also by the Observer. The original of the completed log sheets shall be kept by the Observer and a reasonable number of certified copies shall be made available to the Valve Manufacturer / Applicant.

3.4. The Test Engineer and the Observer shall become familiar with all the procedures and requirements associated with these tests before the tests commence.

3.5. Pressure measurements shall be made to an accuracy of  $\pm 1\%$  of reading. Temperature measurements shall be made to an accuracy of  $\pm 0.1^\circ\text{C}$ . Flow measurements shall be made to an accuracy of  $\pm 5\%$  of reading. Any known errors greater than the required accuracy of reading, shall be taken into account in the measurements.

3.6. All testing equipment and gauges shall be calibrated in accordance with accepted national standards prior to the tests being carried out and the certificates of compliance shall be made available for inspection and endorsement by the Test Engineer and the Observer. The Test Engineer shall satisfy himself/herself that the test equipment complies with the stated standard of calibration before the test commences. Each certificate of compliance and calibration report shall be endorsed by the Test Engineer and the Observer.

3.7. The actual number of samples of each model, type and size of warm water generator to be tested shall be proposed in writing by the Manufacturer / Applicant. The warm water generator(s) for testing shall be sampled at random by the Observer from bulk stock held by the Manufacturer / Applicant or another source as agreed by the Observer. The method of sampling used shall be stated in the Report prepared by the Observer. Each sample selected shall be permanently marked by the Observer with a unique reference number which shall be entered on each log sheet detailing the test results for that particular warm water generator.

3.8. Any special or qualifying comments on the conduct of the tests, the test results or observations made, shall be included in the Report prepared by the Observer. A copy of that Report shall be supplied to the Manufacturer for transmittal to the Independent Certifier for later transfer to NSW Ministry of Health.

3.9. All test specifications, log sheets, test reports, drawings and all other accompanying documents intended to be supplied to the Independent Certifier for later transfer to NSW Ministry of Health, shall at least be in English and S.I. Units of measurement.

3.10. It is most important that isolation valves shut off tight and that all valves be sized to enable Test Specification and Manufacturers' requirements to be met.

3.11. After all the tests have been completed, a copy of each of the following documents shall be submitted by the Manufacturer / Applicant to NSW Ministry of Health

- (i) Test Report prepared by the Observer, and
- (ii) Completed Log Sheets for all tests carried out, and
- (iii) Print-out from the data logger with suitable notations for all tests, and
- (iv) Detail workshop drawings for the Operational Test Rig and
- (v) Test Certificates (for all test equipment and gauges) endorsed by the Test Engineer and Observer, and
- (vi) Overall submissions certifying all tests per this Specification.

## 4. TESTING PARAMETERS0

### 4.1. General

4.1.1 Unless otherwise stated in this Specification, all test conditions shall be constant throughout each test.

4.1.2 The Manufacturer's detailed test specification shall fully describe all test procedures and techniques to be used throughout the various tests. The test conditions scheduled are subject to any overriding qualifications stated in the manufacturers' published installation, commissioning and operating instructions.

4.1.3 Additional tests under other conditions of operation likely to be experienced in service shall be carried out as deemed necessary by the manufacturer to validate compliance with the scald prevention requirements of this Specification.

### 4.2. Inlet Supply Temperatures

The tests shall be carried out using cold water, whose temperature shall be sensed at the supply line to the warm water generator as shown in the respective drawing. The maximum temperature shall be not more than 2°C below the maximum temperature as allowed and the minimum temperature shall be not more than 2°C above the minimum temperature as indicated in Section 6 of this Specification.

### 4.3. Inlet Supply Pressures (Dynamic)

The tests shall be carried out using the inlet water supply pressures (dynamic, flow, maintained or operating) as indicated in Section 6 of this Specification. These pressures shall be sensed at the supply lines to the warm water generator as shown in the test rig drawing. The pressure of the cold water shall be maintained within  $\pm$  10% of the pressure as indicated in Section 6 of this Specification.

## 5. OPERATIONAL TESTING

### 5.1. General

5.1.1. This series of tests is mainly intended to simulate an actual showering situation in a non domestic building involving an unforeseen breakdown of the water supply or any operation or malfunction of the warm water generator covered by the supplier's installation, commissioning, operation and maintenance instructions and the delay in attendant staff recognising the problem and obtaining technical assistance from maintenance / service personnel.

### 5.2. Testing Apparatus

5.2.1. All warm water generators required to be tested shall be tested on a purpose built test rig having the capability to at least meet and measure all the requirements of this Specification.



5.2.2. Test instruments, plant and equipment complying with other national standards may be used as an alternative.

5.2.3. The warm water lines shall be copper pipe for all tests, the maximum velocity of the warm water in the pipe to the ablution outlet fixture, shall not exceed 3metres per second.

5.2.4. For testing under conditions of low inlet pressure for the cold water, a draw off tap of same nominal size as the outlet connection of the warm water generator shall be fitted at the warm water outlet.

5.2.5. For testing under conditions of high inlet pressure for the cold water, a lever (quick) acting type ball valve shall be fitted at the warm water outlet in parallel with the draw -off tap. The outlet of this valve may be restricted by means of a stop valve or other suitable flow controlling valve.

5.2.6. The Manufacturer / Applicant shall provide a detailed drawing of the complete test installation incorporating the test rig and specifying all relevant particulars (including reference to applicable national standards) for all plant, equipment and test instruments associated with the test. The drawing shall be in sufficient full detail including a complete description of all items to enable the test rig to be reproduced at another site if it is considered necessary to have any results verified at a later date. The drawing shall outline the method of producing and supplying any heated water and also any chilled water. A copy of such drawing (previously endorsed by the Manufacturer / Applicant) shall after subsequent verification and endorsement by the Observer, accompany the test results to be supplied by the Manufacturer.

5.2.7. Installation, commissioning and operation of the warm water generator under test shall comply with the Manufacturer's published installation, commissioning and operating instructions. Certification to that effect shall be provided by the Test Engineer to the Observer. A copy of such instructions shall be supplied by the Manufacturer to the Observer prior to the tests commencing.

5.2.8. The flow rate of the discharge or warm water shall be measured by the use of a calibrated container (alternatively a container and suitable weighing scale) and a stop watch. Alternatively, a flow meter may be used.

5.2.9. All temperatures and variations in temperature of the warm water at the ablution outlet fitting shall be measured by means of precision style, digital (electronic type) of quick responding, temperature measuring instruments capable of indicating in tenths of 1<sup>o</sup> C and also using relevant temperature sensing probes as recommended by the supplier of the instruments. The instrument shall be of the type capable of indicating the maximum temperature. Details of the make, model and serial number of all the instruments used during the tests shall be included in the Report prepared by the Observer. The probes shall be fixed in position (not hand held) in contact with the water outlet and shall sense the temperature of the water stream (not the spray) and any drips. The instrument shall be checked by the Observer for correct temperature indication both immediately before and after each series of tests.

5.2.10. As an additional aid and for cross reference, a suitable electronic type data logger capable of recording data at a speed of at least one tenth of a second, shall be coupled to the same probe as the digital thermometer as it will then receive the same signal.

### 5.3. Pre-selected Temperature for Warm Water Supply

5.3.1. All warm water generators shall be made operational within the pre-selected temperature range for warm water as detailed in Section 6 of this Specification.

5.3.2. The temperature of the warm water produced shall be sensed at the outlet fixture.

### 5.4. Warm Water Flow

5.4.1. With an adequate quantity of cold water available for supply to the warm water generator within the test conditions set out in Section 6 of this Specification, the warm water generator shall be put into operation to produce warm water at the ablution outlet fixture

5.4.2. Whenever the warm water generator is made operational, the initial flow of water produced at the outlet shall be either of warm water or of cold water followed quickly by warm water or alternatively only warm water shall flow. Hot water shall not be supplied at the outlet fitting.

5.4.3. By means of the outlet control, the flowrate of the warm water shall be adjusted to provide the minimum recommended flowrate of warm water that can be produced by the warm water generator for acceptable temperature control as stated in the Manufacturer's published literature. Any necessary fine adjustments shall be made to the warm water generator until a temperature of between 42.0 to 43.5° C is provided at the outlet fitting. This temperature condition is necessary because warm water supply systems generally operate with warm water in the upper half of the required temperature range. The temperature locking device, lock shield cover or other standard device (provided by the Manufacturer) shall be adjusted to ensure that the above pre-set warm water temperature cannot be altered during the tests. The actual basic test conditions shall be measured and recorded in the log sheets.

5.4.4. Warm water shall be permitted to flow for a period of at least five minutes and the following conditions shall then be measured and recorded:

- (i) Pressure of cold water ;
- (ii) Flowrate of cold water (When flow rate meter is fitted)
- (iii) Pressure of warm water;
- (iv) Temperature of warm water
- (v) Check flow rate of warm water
- (vi) Also temperature of cold water where the flow rate of cold water is to be calculated rather than measured.

### 5.5. Thermal Shut -Off (Cold Water Shut-Off)

5.5.1. The isolating valves in the cold water pressure measuring line and the warm water pressure measuring line shall be closed.

5.5.2. The valve in the cold water supply line to the warm water generator shall be quickly closed (shut) so as to completely stop or isolate the flow of cold water and during or as a result of this action, shall cause the warm water generator to rapidly respond and provide a quick, thermal shut -off operation. From the time of complete shut-off of the cold water valve to the cessation or termination of significant reduction in flow (not any ultimate termination in flow) of water discharged from the warm water outlet, the elapsed time shall be measured. The thermal shut -off time should preferably not exceed four seconds. Any water subsequently produced by the warm water generator shall have a temperature measured at the outlet, NOT exceeding the maximum permissible upper limit (46.0°C). The following particulars shall be measured and recorded in the log sheet:

- (i) Thermal Shut -off (reaction) time, and
- (ii) The maximum temperature of the discharge water during this period.

5.5.3. With the ball valve in the cold water supply line to the warm water generator, kept closed (shut) during this phase of the test, the temperature of the discharge water shall be kept under constant visual observation for a period of at least thirty (30) minutes to ensure that the temperature of any water still being emitted from the outlet fitting shall have a temperature NOT exceeding 46.0°C. At intervals of approximately five minutes, the actual temperature of any water still being emitted from the abluion outlet during this period shall be recorded. The maximum accumulated flow of any leakage water including drips during this particular test shall not exceed 20 litres. These observations shall be recorded in the log sheets.

#### 5.6. Thermal Adjustment after Thermal Shut -Off Test

5.6.1. At the conclusion of the foregoing test, the ball valve in the cold water supply line to the warm water generator shall be opened quickly and fully and the following conditions measured and recorded in the log sheets:

- (i) The elapsed time taken for the warm water generator to be reactivated and to produce stable warm water at the outlet fitting. The elapsed time should preferably not exceed ten seconds. During this time, the temperature of the blended or discharge water shall NOT exceed 46.0°C.
- (ii) The warm water subsequently produced at the outlet shall be within 40.5 to 43.5°C.

#### 5.7. Stability of Operation of Warm Water Generator

5.7.1. The warm water outlet shall be opened fully and the warm water temperature shall be observed until it has stabilised.

5.7.2. The magnitude and duration of any excursions of the warm water outside the permitted temperature range of 40.5 to 43.5°C, shall be noted and also the time after the opening of the outlet at which these excursions occur. When the warm water temperature has stabilised, the following measurements shall be recorded: -

- (i) The inlet pressure of the cold water.
- (ii) The flowrate of cold water.
- (iii) The pressure of the warm water.
- (iv) The temperature of the warm water.
- (v) The flowrate of warm water.
- (vi) Also temperature of cold water where the flowrate of cold water is to be calculated rather than measured.
- (vii) The time for the warm water to reach the prescribed operating temperature in °C.

5.7.3. The following details shall be obtained from the data logger and recorded in the log sheets:

- (a) Elapsed time to achieve stable temperature for warm water.
- (b) Maximum temperature of warm water.
- (c) Maximum time of departure from 40.5 to 43.5° C.
- (d) Elapsed time when maximum temperature of warm water occurred.

Section 6 - Operational Test Data

**Schedule of Basic Conditions for Operational Test on Warm Water Generator**

| Manufacturer's Rating as per Published Operating Instructions to Produce Warm Water at the Outlet Fitting (See Notes below) |   |         |     |   |         |     |                  |               |   |
|---|---|---------|-----|---|---------|-----|------------------|---------------|---|
| Test Series No.   | Temperature of Cold Water at Inlet to Warm Water Generator ( °C ) |         |     | Dynamic Pressure of Cold Water at Inlet to Warm Water Generator (kPa) |         |     | Warm Water       |               |   |
|   | Min   | Ambient | Max | Min   | Ambient | Max | Temperature      | Flowrate      | Dynamic Pressure                                |
| 1   |   |         | X   |   |         | X   | 40.5 to 43.5 ° C | Rated minimum | To be measured as shown in the test rig drawing |
| 2   |   |         | X   | X   |         |     |                  |               |   |
| 3   | X   |         |     |   |         | X   |                  |               |   |
| 4   | X   |         |     | X   |         |     |                  |               |   |
| 5   |   | X       |     |   | X       |     |                  |               |   |

**NOTES:**

- (i) Unless otherwise stated in this Specification, all test conditions shall be constant throughout each test.
- (ii) As an alternative, inlet water temperatures just outside the extreme range recommended by the Manufacturer in published literature, may be used at the option of the Manufacturer
- (iii) Other test conditions may also be used at the option of the Manufacturer.
- (iv) The test conditions scheduled above are subject to any overriding qualifications stated in the manufacturers' published installation, commissioning and operating instructions.

TEST RESULTS FOR (BRAND NAME)  
WARM WATER GENERATOR IN  
ACCORDANCE WITH THE ATTACHED MANUFACTURER'S TEST SPECIFICATION

- (a) Business Name of Manufacturer or his Agent: .....  
.....  
Registered Office Address of Manufacturer: .....  
.....  
Name of Test Engineer: .....  
.....
- (b) Business Name of Independent Testing Body: .....  
.....  
Name of Observer: .....  
.....
- (c) Business Name and Registered Office Address of the National Testing Authority with which the Testing Body is currently accredited:  
.....
- (d) Address of Location Where the Tests Were Carried Out:  
.....
- (e) Reference Designation and Date of Publication for Manufacturers' Test Specification Employed for the Purposes of these Tests:  
.....
- (f) Brand Name of Warm Water Generator:  
.....  
.....
- (g) Model/Type No. for Warm Water Generator Tested:  
.....  
.....
- (h) Warm Water Generator Sample No.:  
.....
- (i) Installation/Commissioning/Operating/Maintenance instructions and All Other Relevant Document



**(Name of Warm Water Generating System Manufacturer)  
LOG SHEET FOR OPERATIONAL TESTS  
ON (BRAND NAME) OF Warm water generating system**

**System Designation: (Model NO./Type/Size)**      **System Sample No: .....**      **Date of Tests: .....**

Location of Tests: (Business Name) and (Address)

System Manufacturer's Test Spec. No.: (Reference NO.) and (Date)  
Test Rig Reference: (Drawing No. or Other Designation)

For method of testing, refer to System Manufacturers' test spec.

| Operational Test Series No. | Basic Operational Test Conditions<br>Refer to Section (7) of Test Specification |                             |   |   | Pre-set Warm Water Conditions |                             | Conditions at end of five minutes |                                  |                               |                                   |                               |                             |
|-----------------------------|---|-----------------------------|---|---|-------------------------------|-----------------------------|-----------------------------------|----------------------------------|-------------------------------|-----------------------------------|-------------------------------|-----------------------------|
|                             | Temp. of Hot Water<br>(°C)  | Temp. of Cold Water<br>(°C) | Press of Cold and also Hot Water<br>(kPa) | Press of Cold and also Hot Water<br>(kPa) | Min. Flowrate<br>(L/min)      | Temp. of Warm Water<br>(°C) | Press. Of Hot Water<br>(kPa)      | Flowrate of Hot Water<br>(L/min) | Press. Of Cold Water<br>(kPa) | Flowrate of Cold Water<br>(L/min) | Press. Of Warm Water<br>(kPa) | Temp. of Warm Water<br>(°C) |
| 1                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| 2                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| 3                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| 4                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| 5                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| 6                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| 7                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| 8                           |   |                             |   |   |                               |                             |                                   |                                  |                               |                                   |                               |                             |
| Acceptance Criteria         | -   | -                           | -   | -   | (as rated)                    | 40.5 to 43.5°C              | -                                 | -                                | -                             | -                                 | -                             | 40.5 to 43.5°C              |

All test results shall be observed and recorded by the Observer.

The completed log sheet shall be kept by the Observer

**Test Engineer:** (Signature and name) for and on behalf of (Name of System Manufacturer)

**Test Observer:** (Signature and name) for and on behalf of (Name of independent test body)



**(Name of System Manufacturer)  
LOG SHEET FOR OPERATIONAL TESTS  
ON (BRAND NAME) OF Warm water generating system**

**System Designation: (Model NO./Type/Size)      System Sample No: .....      Date of Tests: .....**

Location of Tests: (Business Name) and (Address)      System Manufacturer's Test Spec. No.: (Reference NO.) and (Date)  
Test Rig Reference: (Drawing No.)

For method of testing, refer to System Manufacturers' test specification

| Operational Test Series No. Repeated | Thermal Shut off (Cold Water Shut Off) | Cold water shut off (Continued on next sheet) |                             |                   |                             |                   |                             |                   |                             |                   |                             |
|--------------------------------------|--|---|-----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|
|                                      |  | 5 mins later                                  |                             | 10 mins later     |                             | 15 mins later     |                             | 20 mins later     |                             | 25 mins later     |                             |
| Thermal Shut off Time (secs)         | Maximum Warm Water Temp. (°C)          | Outlet Temp. (°C)                             | Accum. Outlet Flow (litres) | Outlet Temp. (°C) | Accum. Outlet Flow (litres) | Outlet Temp. (°C) | Accum. Outlet Flow (litres) | Outlet Temp. (°C) | Accum. Outlet Flow (litres) | Outlet Temp. (°C) | Accum. Outlet Flow (litres) |
| 1                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| 2                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| 3                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| 4                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| 5                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| 6                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| 7                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| 8                                    |  |   |                             |                   |                             |                   |                             |                   |                             |                   |                             |
| Acceptance Criteria                  | 46°C max.                              | 46°C max.                                     | -                           | 46°C max.         | -                           | 46°C max.         | -                           | 46°C max.         | -                           | 46°C max.         | -                           |

**All test results shall be observed and recorded by the Observer.**

The completed log sheet shall be kept by the Observer

**Test Engineer:** (Signature and name) for and on behalf of (Name of System Manufacturer)

**Test Observer:** (Signature and name) for and on behalf of (Name of independent test body)

(Name of System Manufacturer)  
**LOG SHEET FOR OPERATIONAL TESTS**  
**ON (BRAND NAME) OF warm water generating system**

**System Designation: (Model NO./Type/Size)**      **System Sample No: .....**      **Date of Tests: .....**

Location of Tests: (Business Name) and (Address)      System Manufacturer's Test Spec. No.: (Reference NO.) and (Date)  
Test Rig Reference: (Drawing No.)

For method of testing, refer to System Manufacturers' test specification

| Operational Test Series No. Repeated | Cold Water Shut Off (Continued) |                   | Thermal Adjustment After Thermal shut off Test |                 | Cold Shock Test (Hot Water Shut Off) |                      |
|--------------------------------------|---------------------------------|-------------------|--|-----------------|--------------------------------------|----------------------|
|                                      | 30 mins. later                  |                   | Recovery Time (secs)                           | Max. Temp. (°C) | Reaction Time (secs)                 | Accum. Flow (litres) |
| Outlet Temp. (°C)                    | Accum. Outlet Flow (°C)         | Outlet Temp. (°C) |  |                 |                                      |                      |
| 1                                    |                                 |                   |  |                 |                                      |                      |
| 2                                    |                                 |                   |  |                 |                                      |                      |
| 3                                    |                                 |                   |  |                 |                                      |                      |
| 4                                    |                                 |                   |  |                 |                                      |                      |
| 5                                    |                                 |                   |  |                 |                                      |                      |
| 6                                    |                                 |                   |  |                 |                                      |                      |
| 7                                    |                                 |                   |  |                 |                                      |                      |
| 8                                    |                                 |                   |  |                 |                                      |                      |
| Acceptance Criteria                  | 46°C max.                       | 20 litres max.    |  | 46°C max.       |                                      |                      |

**All test results shall be observed and recorded by the Observer.**

The completed log sheet shall be kept by the Observer

**Test Engineer:** (Signature and name) for and on behalf of  
(Name of System Manufacturer)

**Test Observer:** (Signature and name) for and on behalf of  
(Name of independent test body.)

**FORM 1**

**NSW MINISTRY OF HEALTH**

**APPLICATION FOR APPROVAL OF A  
WARM WATER GENERATING SYSTEM NOT INCORPORATING  
A THERMOSTATIC MIXING VALVE FOR ABLUTION PURPOSES  
(Public Health Regulation, 2012 – Cl 6 (4))**

\*\*\*\*\*

Company Name: .....

Company's Representative (Name) .....

Company's Representative (Position : ).....

Company Address:

.....Post Code:.....

Telephone No: ..... Facsimile No:

Application for Approval of .....

.....WARM WATER GENERATING SYSTEM

Model No. ....

*The product being offered meets the NSW Ministry of Health's requirements for the approval of warm water generating systems not incorporating thermostatic mixing valves.*

Signature of the Company Representative:

Date: .....

***Completed application to be sent to:***  
**The NSW Ministry of Health**  
**PO Box 201**  
**WAGGA WAGGA, NSW, 2650**

=====  
**For Official use only**

Date Received:

Fee Received: Receipt No.....

**FORM 2**

**NSW MINISTRY OF HEALTH**

**Certificate of Compliance**

**APPLICATION FOR APPROVAL OF A  
WARM WATER GENERATING SYSTEM  
NOT INCORPORATING A  
THERMOSTATIC MIXING VALVE FOR ABLUTION PURPOSES  
(Public Health Regulation, 2012 – Cl 6 (4))**

\*\*\*\*\*

I .....<sup>1</sup> Hereby certify that I have examined the  
Application for approval of the .....  
.....<sup>2</sup>

Which is submitted to the NSW Ministry of Health for approval as a Warm Water System in terms  
Of the Public Health Regulation.

The application has been submitted by .....<sup>3</sup>  
Of .....

The application has been examined and I certify that the application meets **all** of the requirements  
as detailed 1 – 3 inclusive in the GENERAL section as listed on page ii of this NSW Ministry of Health  
Specification for the Operational Testing of Warm water generating systems not incorporating Thermostatic  
Mixing Valves

Name:

For and on behalf of either:

Australian Certification Services

or

Quality Assurance Services (QAS)

<sup>1</sup> Name of Independent Certifier  
<sup>2</sup> Name/ Brand / Model of warm water generating system  
<sup>3</sup> Name of manufacturer / applicant of warm water generating system