1. Introduction

This document sets out the LPCB listing requirements for smoke and heat alarms for dwellings. It is specific to smoke and heat alarms. The performance and test requirements are given in the standards listed in Section 9 and have been approved by Expert Group A of the Loss Prevention Certification Board (LPCB). The aim of this scheme is to ensure that domestic smoke and heat alarms comply with the requirements specified in the appropriate standards and Building Regulations which should minimise the risk to people and/or property.

2. Scope

This scheme provides ongoing independent, third party assessment and certification of smoke and heat alarms to ensure that the requirements of the appropriate standards are met and maintained. This scheme document must be read in conjunction with PN 110 “The product certification process”.

3. Testing of Products

Section 9 lists the applicable standards for various types of detectors. In order to achieve certification or approval, the detector must comply with the requirements specified in the appropriate standard(s) dependent on its designed detection principle(s).

The product will be tested periodically for continued compliance with aspects of the standards; Section 10 sets out the audit testing requirements.

All samples supplied for testing by the manufacturer must be representative of normal production and fully traceable to a specific production batch through quality control records.

4. Applications to join the Scheme

To apply for product certification complete and return the appropriate application forms together with supporting technical drawings and documentation.

Your application will be reviewed and, if acceptable, a quotation will be prepared. This will detail all relevant costs, estimated project duration, sample requirements and a period of validity for the quotation. The quotation will be subject to BRE Global Ltd’s Standard Terms and Conditions as detailed in PN101.

For more information or help with your application contact BRE Global on 01923 664100.
5. **Management Systems Certification to ISO 9001**

In order to ensure that the smoke and heat alarms meet and continue to meet the requirements of the standard(s), we expect the manufacturer to maintain full quality control of the production process. For LPCB listing the manufacturer must have ISO 9001. Where applicants hold ISO 9001 with another Certification body, LPCB will carry out Factory Production Control (FPC) assessments. The applicant must also meet the additional requirements set out in Section 11. Full details of the ISO 9001 certification process are set out in SD003 ‘Quality Management System Certification Scheme’.

6. **Certification**

A certificate is awarded following satisfactory completion of the assessment programme by LPCB.

Certificates remain valid providing there continues to be:

- Satisfactory results from the annual product audit testing programme set out in Section 10.
- Satisfactory surveillance results as assessed by LPCB in respect of FPC or ISO 9001 requirements and the requirements identified in Section 11.
- LPCB approval of any proposed modifications to the product which may affect performance. Requests to assess proposed modifications are made by completing the modification application form.

The applicant will be advised of any further requirements where necessary to retain certification.

7. **Alternative Marking (Cross Listing)**

In certain circumstances, LPCB listed products may be branded with another company’s name and product identification incorporating the LPCB Certification Mark.

Products that are LPCB approved and Red Book listed for the original manufacturer can, with the agreement of the Owner of the product, be approved and Red Book listed under the name of another company, under a different name or brand. This can be done without having to undergo the full approval process so long as the actual product is not significantly changed in design, construction or function.

For further information regarding the types of alternative marking (cross listing) available, please refer to publication PN103 ‘Use of the BRE Global Marks’.
8. Certification Mark

The Supplier may use the LPCB Certification Mark as directed in the publication PN103 'Use of the BRE Global Marks'. The Mark that may be used for this scheme is as follows:

![LPCB Certification Mark]

Alternatively, if there is limited space on the product, the following mark may be applied instead.

![LPCB Certification Mark]
9. **Type Testing Requirements:**

The number of samples selected for type testing is dependent on a number of factors, for example:

1. The standard(s) the detector to be tested to.
2. Detector sensitivities, classifications or modes of operation.
3. Specific detector features to be tested.

Testing will be performed by a UKAS (or equivalent) accredited laboratory acceptable to the LPCB.

Marking will be examined for compliance with the relevant clause of the standard and LPCB publication PN103.

Documentation requirements shall include technical information of the products submitted for approval. This includes:

- Schematic diagrams
- Installation & operating instructions
- General assembly drawings
- PCB artwork
- Mechanical drawings
- Parts list (including critical components)
- Technical specification
- Description of operation
- Software documentation
- Label drawings
- Product datasheet

<table>
<thead>
<tr>
<th>Standards / regulations applicable</th>
<th>Summary of Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 14604:2005 – Smoke alarm devices</td>
<td>All applicable clauses</td>
</tr>
</tbody>
</table>

10. **Product Audit Test Requirements**

This section of the document sets out the LPCB product audit testing requirements. It is specific to smoke and heat alarms. Products will be tested periodically for continued compliance with aspects of the standards they are approved to and audit requirements specified in this document.

Note that although LPCB no longer approve products to the BS 5446-1:2003 standard, maintenance of previously approved products to this standard will continue until they are fully withdrawn.
If products are not made available for audit testing then LPCB has the right to suspend or withdraw the product approval/certification.

10.1 Selection Criteria

The number and type of products selected and the testing required each year are at the discretion of the LPCB. The selection of detectors is dependent on a number of factors including:

(a) Number of products approved/certified by the company
(b) Number of products within the range
(c) Any testing undertaken since original evaluation (e.g. modification)
(d) Modifications made to the product where no testing was required
(e) Factory production relocation which coincides with their annual product audit

All samples supplied / selected for testing must be representative of normal production and be fully traceable to a specific production batch through quality control records.

The number of samples selected for audit testing is dependent on a number of factors, for example:

(a) The standard(s) the product is to be tested to.
(b) Product classifications or modes of operation.
(c) Specific product features to be tested.
(d) The similarity between products selected for an audit

10.2 Assessment and Test Requirements:

For each product type, the minimum checks and requirements to be applied to the selected products are outlined in the appropriate Annex:

Table 2: Product Audit Test and Assessment

<table>
<thead>
<tr>
<th>Annex</th>
<th>Product Type</th>
<th>Standard(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Domestic Smoke Detectors</td>
<td>EN 14604:2005</td>
</tr>
<tr>
<td>B</td>
<td>Domestic Smoke Detectors</td>
<td>BS5446: Part 1: 2000</td>
</tr>
<tr>
<td>C</td>
<td>Domestic Heat Detectors</td>
<td>BS5446: Part 2: 2003</td>
</tr>
</tbody>
</table>

Other tests may be specified by LPCB if deemed to be necessary, for example following concerns identified in a previous evaluation or in the field. This will be communicated to the client prior to testing.
10.3 Audit Test Result

The product audit will be deemed successful providing that all audit test requirements have been met.

Failure to meet any of audit test requirements shall be communicated to the client in the form of a report detailing the nature of the failure and the following shall be applied:

- Clients will be expected to investigate the matter and provide a satisfactory explanation including details of the corrective action to be reviewed by LPCB. The client must respond to the failure within the specified time limit. If the Client fails to respond by the given deadline or LPCB deem the response to be unsatisfactory then the product approval may be suspended. If the product is suspended then all LPCB marked devices held in stock or in transportation must be quarantined until further notice.

- Investigations or further testing which arise as a result of any failure identified during the product audit will incur additional costs.

- Following any suspension of product approval, a final deadline will be set for the matter to be satisfactorily resolved. Failure to resolve the matter by the final suspension deadline may result in the full withdrawal of the product approval.

**Note:** Products may be suspended immediately once a failure has been identified depending on the nature of the failure. All timescales involved will be at LPCB’s discretion.
### 11. Additional Factory Production Control Requirements

#### Table 3: Additional Factory Production Control Requirements

<table>
<thead>
<tr>
<th>Topics</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checks and tests</td>
<td>The production process should include functional and performance checks to monitor the production process and in particular the sensitivity settings of the smoke and heat alarms in order to confirm that the product continues to meet the same performance as the type test samples. All smoke and heat alarms should be subjected to functional tests that include checks of the ability of the smoke and heat alarms to signal an alarm. At least a representative sample should be subjected to a performance test that involves stimulating the sensor with the appropriate fire parameter (e.g. smoke or heat etc).</td>
</tr>
<tr>
<td>Design and process checks</td>
<td>Checks of the approved smoke and heat alarms build status against the LPCB approved document register. To check any change in production process which may influence the performance and reliability of the smoke and heat alarms.</td>
</tr>
</tbody>
</table>
Annex A
(Audit requirements for Domestic Smoke Detectors Approved to EN 14604:2005)

This annex defines the LPCB audit requirements for continued certification / approval of the product. Failure to meet the audit requirements is deemed as a non-compliance, please refer to Section 10.3 for failure procedure.

A.1 Marking:

The product must be marked in accordance with EN 14604:2005, Clause 4.19. In addition it must also meet the LPCB requirements specified in publication PN103.

A.2 Software Issue:

The software version must be the same as the version that was most recently approved by LPCB, this includes internal and external software required to operate the device where applicable.

A.3 Documentation:

The submitted build status of the audited sample shall be identical to the LPCB approved build status.

*Note: The list of documents can be presented to LPCB on F335 or equivalent form.*

A.4 Sensitivity Measurements:

Smoke tunnel measurements shall be conducted in accordance with EN 14604:2005 Clause 5.1.5 (Measurement of response threshold value), with detectors tested using the same setup as per the original evaluation.

The detectors shall be deemed to comply if the following requirements are met:

(a) All measurements shall lie within the allowed limits* as defined by Clause 5.4 (Initial sensitivity) EN 14604:2005.

* Note 1: Allowed limits are defined as the limits that manufactures’ could potentially manufacture to providing they still meet the requirements of the standard

- The maximum allowed limit is derived as follows:

  1.33 x production mean as determined in the original evaluation†

- The minimum allowed limit is derived as follows:

  production mean as determined in the original evaluation† / 1.5
&
\[ m \geq 0.05 \text{ dB/m} \text{ or } y \geq 0.2 \]

† Note 2: Where a detector has undergone a modification (approved by LPCB) which has changed the sensitivity range of the detector then the mean of that new range will be considered as the production mean for the above derivation.

(b) All measurements shall lie within the most recent, LPCB approved† limits.

‡ Note 3: Approved limits are defined as the limits that have been measured in the BRE smoke tunnel and compliance to the requirements of the standard has been confirmed and verified

(i) If any of the measurements fall below the minimum approved limit then the detector may be likely to suffer from false alarms so further testing may be deemed to be necessary.

(ii) If any of the measurements exceed the maximum approved limit then the detector may have insufficient sensitivity for meeting the fire test limits and so may be tested in accordance with EN 14604:2005, Clause 5.15 (Fire sensitivity) and if tested must meet the requirements of that clause in order to confirm compliance.

A.5 Alarm Sound Level:

Sound level measurements shall be conducted in accordance with Clause 5.17 of EN 14604:2005 (Sound output). The detectors shall be deemed to comply if the requirements of the above clause are met.
Annex B

(Audit requirements for Domestic Smoke Detectors Approved to BS 5446-1:2000)

This annex defines the LPCB audit requirements for continued certification / approval of the product. Failure to meet the audit requirements is deemed as a non-compliance, please refer to Section 10.3 for failure procedure.

B.1 Marking:

The product must be marked in accordance with BS 5446-1:2000, Clause 4. In addition it must also meet the LPCB requirements specified in publication PN103.

B.2 Software Issue:

The software version must be the same as the version that was most recently approved by LPCB, this includes internal and external software required to operate the device where applicable.

B.3 Documentation:

The submitted build status of the audited sample shall be identical to the LPCB approved build status.

Note: The list of documents can be presented to LPCB on F335 or equivalent form.

B.4 Sensitivity Measurements:

Smoke tunnel measurements shall be conducted in accordance with BS 5446-1:2000, Clause 8, with detectors tested using the same setup as per the original evaluation.

The detectors shall be deemed to comply if the following requirements are met:

(a) All measurements shall lie within the allowed limits* as defined by Clause 10.2.2 (Preliminary test & numbering) BS 5446-1:2000.

* Note 1: Allowed limits are defined as the limits that manufactures’ could potentially manufacture to providing they still meet the requirements of the standard

\[ \text{max : min} \leq 2^\dagger \]

† Note 2: The max & min refer to the extremes measured during the current testing.
(b) All measurements shall lie within the most recent, LPCB approved limits.

‡ Note 3: Approved limits are defined as the limits that have been measured in the BRE smoke tunnel and compliance to the requirements of the standard has been confirmed and verified

(i) If any of the measurements fall below the minimum approved limit then the detector may be likely to suffer from false alarms so further testing may be deemed to be necessary.

(ii) If any of the measurements exceed the maximum approved limit then the detector may have insufficient sensitivity for meeting the fire test limits and so may be tested in accordance with BS 5446-1:2000, Clause 20 (Fire sensitivity) and if tested must meet the requirements of that clause in order to confirm compliance.

B.5 Alarm Sound Level:

Sound level measurements shall be conducted in accordance with Clause 24 of BS 5446-1:2000 (Sound output). The detectors shall be deemed to comply if the requirements of the above clause are met.
Annex C

(Audit requirements for Domestic Heat Detectors Approved to BS 5446-2:2003)

This annex defines the LPCB audit requirements for continued certification / approval of the product. Failure to meet the audit requirements is deemed as a non-compliance, please refer to Section 10.3 for failure procedure.

C.1 Marking:

The product must be marked in accordance with BS 5446-2:2003, Clause 6. In addition it must also meet the LPCB requirements specified in publication PN103.

C.2 Software Issue:

The software version must be the same as the version that was most recently approved by LPCB, this includes internal and external software required to operate the device where applicable.

C.3 Documentation:

The submitted build status of the audited sample shall be identical to the LPCB approved build status.

Note: The list of documents can be presented to LPCB on F335 or equivalent form.

C.4 Response Time Measurements:

Response time measurements shall be conducted in accordance with BS 5446-2:2003 Annex A.1.7 (Measurement of response time) at rates of rise of 3K min\(^{-1}\) and 20K min\(^{-1}\) with detectors tested in the least sensitive orientation using the same setup as per the original evaluation. The measurements must lie within the limits specified in Table 2 (Response time limits) of Clause 5.5.

Further testing in general accordance with BS 5446-2:2003, Clause 5.4 (Static response) & Clause 5.5 (Response from typical application temperature) will be conducted on one or two selected samples using the same setup as per the original evaluation.

The detectors shall be deemed to comply if the requirements of the above clauses are met.

C.5 Alarm Sound Level:

Sound level measurements shall be conducted in accordance with Clause 5.16 of BS 5446-2:2003 (Sound output). The detectors shall be deemed to comply if the requirements of the above clause are met.