

ActivFire® Advisory Note AN-009

Testing and certification of smoke alarms to AS 3786

This advisory note provides an explanation of the pathway for certification of smoke alarms intended for household or residential use to AS 3786. It includes valuable information regarding additional requirements for ongoing certification of smoke alarms to AS 3786 by CSIRO's Fire Systems Laboratory and ActivFire® Scheme.

Background

AS 3786 is the standard for smoke alarms using scattered light, transmitted light, or ionization and was first published in 1990 and has been revised four (4) times subsequently. The latest revision was published on 17 February 2023 (i.e. AS3786:2023 revision). AS 3786 specifies the requirements, test methods, performance criteria and manufacturers' instructions for smoke alarms that operate using scattered light or ionization and are intended for household or similar residential applications.

The current revision is a modified adoption of ISO 12239:2021 and contains several changes and additional requirements when compared to the previous version of AS 3786 (AS 3786:2014 + A1:2015 + A2:2018). The certification pathway to AS 3786:2023 for smoke alarms is detailed below.

Changes to AS 3786

The significant changes and additional requirements of AS 3786:2023, when compared with AS 3786:2014 + A1:2015 + A2:2018, are detailed in Table 1 below.

Table 1 Changes and additional requirements of AS 3786:2023

Clause	Heading	Note
4.4	Response threshold value of detectors using scattered or transmitted light	New requirement with new band classification and test fires end of test conditions.
4.5.2	Visual indicators	Different sections for interconnectable and non-interconnectable smoke alarms.
4.8	Visual indicator visibility	New requirement that all visual indicators shall be visible from a distance of at least 1 m and from at least one point when the smoke alarm is mounted in an ambient light intensity of 500 lux.
4.10	Test facility	New requirement for test facilities to be accessible from outside the smoke alarm when installed as specified in the installation instruction and remote test facility.
4.13	Main power source	<ul style="list-style-type: none"> Clause 4.13.2 b) now allows for the indication of the battery-low condition to occur at least once every 120 s. Clause 4.13.2 c) now requires for smoke alarms with radio frequency to be able to transmit at least one radio frequency alarm signal in the event of a fire.



ActivFire® Advisory Note AN-009
Testing and certification of smoke alarms to AS 3786

Clause	Heading	Note
4.14	Standby power source	<ul style="list-style-type: none">• Clause 4.14.1.1 b) now requires for smoke alarms with radio frequency to be able to transmit at least one radio frequency alarm signal in the event of a fire.• New requirement in clause 4.14.1.2 for when there are no suitable test procedures to verify standby power source that data concerning the smoke alarm loads and standby facility shall be provided by the manufacturer. Documented data concerning the smoke alarm loads has been a requirement in AS 3786:2014 + A1:2015 + A2:2018.
4.15	External power supply equipment	New requirement.
4.22	Protection against the ingress of foreign bodies	Additional requirement to prevent rectangular probes from passing into the smoke chamber.
4.24	Alarm-silence facility – optional function	Additional requirement for interconnected smoke alarm and manual control of smoke alarm.
4.25	Temporary disablement – optional function	New requirement.
4.28	Smoke alarms using radio frequency links – optional function	New requirement for smoke alarms with radio frequency links. Please note that this clause requires that radio frequency interconnected smoke alarms to be tested to the environmental requirements of AS 3786:2023 (e.g. dry heat, cold, damp heat, sulphur dioxide corrosion, impact, vibration, extended temperature and electromagnetic compatibility) and function correctly. Post-environmental testing of this functionality was not previously required.
4.29	Response to slowly developing fires (drift compensation) – optional function	New requirement.
4.30	Marking	New requirements including the following: <ol style="list-style-type: none">1. Explanation of the type of designation.2. Nominal sound level output.3. Extended temperature range of the smoke alarm if applicable.4. All battery types shall be listed for user-replaceable battery smoke alarms.5. Visible information for class I apparatus in accordance with IEC 60065.6. Scattered threshold value band for smoke alarms using scattered and transmitted light.
4.31	Packaging	New requirements include the following: <ol style="list-style-type: none">1. Number and date of the standard.2. Additional markings for type B smoke detectors as required by national regulations.
5.1.8	Test schedule	Additional test requirements in Table 2 of AS 3786:2023 as described below: <ol style="list-style-type: none">1. Smoke alarms using radio frequency links (5.22).2. Temporary disablement facility (5.24).
5.4	Repeatability	Clause 5.4.3 – Has additional requirements for the lower threshold value m_{min} and higher response threshold m_{max} .
5.12	Vibration, sinusoidal (operational)	New requirement for the specimen to be monitored during the conditioning period.
5.22	Smoke alarms using radio frequency links	New requirement for smoke alarms using radio frequency (RF) links. This clause requires that the RF link (i.e. interconnection) function of this type of smoke alarms is required to be tested following each of the operational and endurance environmental tests of AS 3786:2023 (e.g. dry heat, cold, damp heat, sulphur dioxide corrosion, impact, vibration, extended temperature and electromagnetic compatibility) and function correctly. Post-environmental testing of this functionality was not previously required.
5.23	Alarm-silence facility	Minor changes to the test procedure and requirements.
5.24	Temporary disablement facility	New requirement with minor similarities to the test procedure and requirements of Alarm-silence facility test of AS 3786:2014.



ActivFire® Advisory Note AN-009
Testing and certification of smoke alarms to AS 3786

Clause	Heading	Note
5.25	Variation in supply voltage	New requirements for band 2 smoke alarms and the high respond threshold value m_{max} .
5.26	Polarity reversal	Changes to the test procedure for externally powered smoke alarm require testing when the polarity of the supply lines are reversed.
5.28	Electrical safety	<ul style="list-style-type: none">The reference test standards in AS 3786:2023 are IEC 60065:2005 and IEC 60950-1:2005 compared to AS 3786:2014 which refers to the more recent revisions AS/NZS 60065:2012 and AS/NZS 60950.1:2011.CSIRO ActivFire Scheme regards AS/NZS 60065:2012 and AS/NZS 60950.1:2011 as the latest and current revisions of these standards and will therefore continue to accept reports of tests conducted in accordance with AS/NZS 60065:2012 and AS/NZS 60950.1:2011 as suitable evidence.CSIRO ActivFire scheme will therefore require testing of electrical safety of smoke alarms to AS 3786:2023 to be to the relevant clauses of AS/NZS 60065:2012 and AS/NZS 60950.1:2011 in place of IEC 60065:2005 and IEC 60950-1:2005.

Note: Clause 5.19 – 70 dBA sound output – optional function is removed as per Appendix ZZ of AS 3786:2023. The smoke alarm is required to meet Clause 5.18 – 85 dBA sound output, therefore Clause 5.18 is no longer an optional function.

Changes to Certification Provided by CSIRO [updated 2-Sep-2025]

New certification of smoke alarms

From January 2026, CSIRO's ActivFire® Scheme will require new certifications of smoke alarms including “private label / cross listed” smoke alarms to be evaluated to AS 3786:2023 in accordance with CSIRO Technical Specification TS-007 by CSIRO's Fire Systems Laboratory.

It is a condition of ActivFire® certification that the Primary Manufacturing Unit (PMU) of the smoke alarm by audited within the first 6 months of the first issue date of the Certificate of Conformity by representatives of CSIRO.

Revalidation of currently ActivFire® certified smoke alarms

To ensure that all smoke alarms registered with CSIRO's ActivFire® Scheme meet the new certification requirements, CSIRO's ActivFire® Scheme shall require the following:

1. Registrants of currently ActivFire® certified smoke alarms shall have their smoke alarms evaluated to AS 3786:2023 in accordance with CSIRO Technical Specification TS-007 by CSIRO's Fire Systems Laboratory by 31 December 2027, to maintain certification after 30 April 2028.
2. Nominated representatives of either CSIRO's Fire Systems Laboratory or ActivFire® Scheme team shall conduct Factory Production Control (FPC) audit of the PMU within the first 6 months of the first issue date of the Certificate of Conformity.



ActivFire® Advisory Note AN-009
Testing and certification of smoke alarms to AS 3786

Auxiliary devices

Auxiliary devices such as remote controls, hubs, security panels, and Residential Control and Indicating Equipment (RCIE) must be evaluated in accordance with the requirements of CSIRO's ActivFire® Scheme. For more information, refer to CSIRO Technical Specification TS-023 and CSIRO Technical Specification TS-024.

Please note that the ActivFire® Scheme does not certify app-based functions and does not permit the silencing or temporary disablement of smoke alarms using Wi-Fi app-based features. This restriction exists to guarantee that the smoke alarm isn't silenced or disabled by a non-occupant of the dwelling.

Timeline of changes [updated 2-Sep-2025]

September 2025

- Updated AN-009 (this document) and CSIRO Technical Specification TS-007 published.

October 2025

- All new quotes for smoke alarm projects scheduled to start in January 2026 will be quoted to AS 3786:2023 in accordance with CSIRO Technical Specification TS-007.

January 2026

- All new smoke alarm projects starting will be evaluated to AS 3786:2023 in accordance with CSIRO Technical Specification TS-007.

April 2026 and April 2027

- Existing ActivFire® listed smoke alarms will continue to be revalidated.

December 2027

- All existing ActivFire® listed smoke alarms that are to maintain certification by ActivFire® shall be evaluated to AS 3786:2023 in accordance with CSIRO Technical Specification TS-007.

April 2028

- Revalidation of existing ActivFire® listed smoke alarms will only be available where the smoke alarms meet the requirement of CSIRO Technical Specification TS-007.



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Version

v3 – updated to include the changes to the certification of smoke alarms.

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ActivFire® Advisory Note AN-009 v3

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Page 5 of 5
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