

AS 1417.1—1987

Australian Standard<sup>®</sup>

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**RECEIVING ANTENNAS FOR RADIO AND  
TELEVISION IN THE FREQUENCY RANGE  
30 MHz to 1 GHz**

**Part 1 — CONSTRUCTION AND  
INSTALLATION**

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This Australian Standard was prepared by Committee TE/14. It was approved on behalf of the Council of the Standards Association of Australia on 3 August 1987 and published on 1 September 1987.

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The following interests are represented on Committee TE/14:

Antenna Installation Technician's Association of Australia  
Australian Electrical and Electronic Manufacturers Association Ltd  
Australian Broadcasting Corporation  
Confederation of Australian Industry  
Department of Aviation  
Department of Communications  
Department of Defence  
Federation of Australian Commercial Television Stations  
Federation of Australian Radio Broadcasters  
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First published (as AS CC8) .....	1962
Revised and Reissued as AS 1417, Part 1 .....	1973
Revised .....	1987

## PREFACE

This Standard was prepared by the Association's Committee on Radiocommunication to supersede AS 1417, Receiving Antennas for Radio and Television, Part 1–1973, Construction and Installation, is similar to the previous edition but some material has been rearranged for emphasis and new material on wind loadings has been added. Attention is drawn to AS 1170.2, SAA Loading Code, Part 2–Wind Forces, for clarification of that subject.

The purpose of the Standard is to ensure the electrical and mechanical safety of antennas and supporting structures erected for the purpose of receiving radio and television broadcasts. Requirements are given for construction and installation of such antennas and guidance is given on wind force and live load design.

This Standard makes no reference to electrical performance.

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## STANDARDS ASSOCIATION OF AUSTRALIA

## Australian Standard

## RECEIVING ANTENNAS FOR RADIO AND TELEVISION IN THE FREQUENCY RANGE 30 MHz TO 1 GHz

## PART 1: CONSTRUCTION AND INSTALLATION

**1 SCOPE.** This Standard applies to the safety and security of fixed antennas with their supporting structures for use with radio and television broadcast receiving equipment operating within the frequency range 30 MHz to 1 GHz.

**2 REFERENCED DOCUMENTS.** The following Standards are referred to in this Standard:

AS 1170.2	Minimum Design Loads on Structures: Part 2: 1983, Wind Forces.
AS 1394	Round Steel Wire for Ropes.
AS 1604	Preservative Treatment for Sawn Timber, Veneer and Plywood.
AS 1650	Galvanized Coatings.
AS 1768	Lightning Protection.
AS 1882	Earth and Bonding Clamps.
AS 2209	Timber Poles for Overhead Lines.
AS 2319	Rigging Screws and Turnbuckles.
AS 2331	Methods of Test for Metallic and Related Coatings.
AS 3000	SAA Wiring Rules.
AS 3100	Approval and Test Specification for Definitions and General Requirements for Electrical Materials and Equipment.

### 3 DESIGN.

**3.1 General.** Antennas and their supporting structures shall be designed and installed in accordance with good engineering practice. They shall be capable of withstanding dead loads, stray loads due to wind, vibrations due to wind gusts and live loads such as ice and snow, to which the antenna might be subjected.

#### 3.2 Materials.

**3.2.1 Tensile strength.** Aluminium alloy components for the antenna and supporting mast shall meet the following requirements:

Components	Minimum tensile strength, MPa
Elements	70
Boom and supporting mast	140
Free-standing mast	200

Other materials shall have mechanical properties at least equivalent to those given for aluminium and should be otherwise suitable for the purpose.

**3.2.2 Stresses.** The stresses to which supports, elements, stay wires, insulators and fittings associated with

antenna installations may be subjected under maximum loading conditions shall not exceed the V/FB following:

Cast or moulded parts . . . . .	33% of tensile strength.
Guys and wire ropes . . . . .	40% of tensile strength.
Wood poles (self-supporting) . . . . .	40% of tensile strength.
Structures to which the antenna is attached (e.g. chimneys) . . . . .	50% of load required to cause failure or permanent deformation.

**3.2.3 Corrosion resistance.** To minimize deterioration of antennas and their supporting structures, including bases, stays, turnbuckles and other accessories, from salt crust and atmosphere containing sulphur dioxide (industrial environment), all components shall be inherently corrosion resistant or rendered corrosion resistant by galvanizing or other equivalent means.

Joined metal parts shall be free from the possibility of significant electrolytic corrosion, as confirmed by the appropriate tests of AS 2331.

Galvanized or plated components shall comply with the requirements of AS 1650, as appropriate.

**3.2.4 Other physical properties.** Roof-mounted masts and antennas, excluding such components as insulating rods, bushes and cables, shall conform with protection against heat and fire, in accordance with the requirements of Clause 6 of AS 3100.

Feeder connectors shall give good and permanent electrical and mechanical contact.

Connector clamps shall be of a size compatible with the specified feeder cables, as specified in AS 1882.

Plastics materials shall be capable of withstanding exposure to ultraviolet (UV) radiation and weather.

**3.2.5 Hardware and fittings.** Hardware and fittings used in the construction, fixing and mounting of the antenna shall withstand all forces to which they may be subjected in service.

**3.2.6 Weatherproofing.** The sensitive parts of the antenna and associated equipment directly connected to the antenna (such as feeder connections, balun assembly, insulators, etc.) shall be constructed and installed in such a way as to prevent undue penetration of water which may affect electrical performance of the antenna.

### 3.3 Safety considerations.

**3.3.1 Static electricity.** Active elements of an antenna, having no direct electrical connection to the antenna boom, shall be provided with effective means of discharging static electricity.