

Australian Standard[®]

**Receiving antennas for radio and
television in the frequency range
30 MHz to 1 GHz**

Part 2: Performance

This Australian Standard was prepared by Committee TE/14, Radio Communication. It was approved on behalf of the Council of Standards Australia on 22 November 1990 and published on 13 May 1991.

The following interests are represented on Committee TE/14.

Antenna Installation Technician's Association of Australia
Australian Broadcasting Corporation
Australian Electrical and Electronic Manufacturers Association
Civil Aviation Authority
Confederation of Australian Industry
Consumer Electronics Suppliers Association
Department of Defence
Department of Transport and Communications
Federation of Australian Commercial Television Stations
Federation of Australian Radio Broadcasters
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Part 2: Performance

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PREFACE

This Standard was prepared by the Standards Australia Committee on Aerial Systems. It is the first Standard on performance and methods of measurement for receiving antennas for radio and TV in the range 30 MHz to 1 GHz to be produced in Australia. The Standard applies to linearly polarized antennas for domestic use and specifies conditions and methods of measurement applying to receiving antennas.

The Standard is technically identical to IEC 597-(1977), *Aerials for the reception of sound and television broadcasting in the frequency range 30 MHz to 1 GHz*, Parts 1, 2 and 3 covering terminology and definitions, specification of essential properties of receiving antennas and methods of measurement of electrical parameters. By adopting IEC 597, Part 4 provides a guide to the preparation of antenna performance specifications in the form of detailed specification sheets, examples of which are provided to ensure uniformity of presentation.

In addition to the standard climatic tests, a driving rain test is included which, together with the industrial atmosphere tests, provides some assessment of how the antenna resists moisture and corrosion. The Standard does not cover mechanical properties of antennas, apart from certain environmental tests for robustness and vibration, as this subject is covered in AS 1417.1 1987, *Receiving antennas for radio and television in the frequency range 30 MHz to 1 GHz*, Part 1: *Construction and installation*.

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STANDARDS AUSTRALIA

Australian Standard

Receiving antennas for radio and television in the frequency
range 30 MHz to 1 GHz

Part 2: Performance

1 SCOPE This Standard applies to the performance and methods of measurement of fixed receiving antennas for use with radio and television broadcast receiving equipment operating within the frequency range 30 MHz to 1 GHz.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

1099	Basic environmental testing procedures for electrotechnology
1099.2	Tests
1099.2.6	Test Fc—Vibration (sinusoidal)
1099.2.21	Test U—Robustness of terminations and integral mounting devices
1173	Recommended methods of measurement on receivers for television broadcast transmissions
1173.1	General considerations—Electrical measurements other than those at audio-frequencies
1417	Receiving antennas for radio and television in the frequency range 30 MHz to 1 GHz
1417.1	Part 1: Construction and installation

IEC

512	Electromechanical components for electronic equipment; basic testing procedures and measuring methods
512-2	General examination, electrical continuity and contact resistance tests, insulation tests and voltage stress tests
597	Aerials for the reception of sound and television broadcasting in the frequency range 30 MHz to 1 GHz
597-1	Part 1: Electrical and mechanical characteristics
597-2	Part 2: Methods of measurement of electrical performance parameters
597-3	Part 3: Methods of measurement of mechanical properties, vibration and environmental tests
597-4	Part 4: Guide for the preparation of aerial performance specifications—Detailed specification sheet format

CCIR

122-3	Advantages to be gained by using orthogonal wave polarization in the planning of broadcast services in bands 8 (VHF) and 9 (UHF)
417	Minimum field strength for which protection may be sought in planning a television service.

3 DEFINITIONS

3.1 Receiving antenna—that part of a radio receiving system which converts intercepted electromagnetic waves to guided radio frequency currents or fields in an associated transmission line.

NOTE: This definition will normally include any impedance matching devices, baluns and integral active equipment.

3.2 Active receiving antenna—a receiving antenna incorporating an active device as an integral part essential to its proper functioning.

3.3 Directivity (of an antenna in a given direction)—ratio, generally expressed in decibels, of the radiation intensity produced by an antenna in a given direction, to the value of the radiation intensities averaged in all directions in space.

NOTES:

- As the Standard applies to receiving antennas rather than transmitting antennas, the definition should be understood as the ability of an antenna to discriminate between signals arriving from different directions.
- If no direction is specified, the direction of the maximum intensity is implied.
- The directivity is independent of antenna losses and equal to the absolute gain in the same direction if the antenna is loss-less. This definition applies to the far-field region, i.e. at distances greater than $2D^2/\lambda$, where
 D = the maximum dimension of the antenna
 λ = the wavelength, D and λ are expressed in the same units.