

TECHNICAL REPORT



**Transmitting and receiving equipment for radiocommunication – Radio
spectrum measurement method – 300-GHz spectrum measurement equipment**



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Transmitting and receiving equipment for radiocommunication – Radio spectrum measurement method – 300-GHz spectrum measurement equipment

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**TRANSMITTING AND RECEIVING EQUIPMENT FOR
RADIOCOMMUNICATION –
RADIO SPECTRUM MEASUREMENT METHOD – 300-GHz SPECTRUM
MEASUREMENT EQUIPMENT**

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Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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INTRODUCTION

This document describes a high-dynamic-range spectrum measurement system to measure spectra in the frequency range 140 GHz to 300 GHz. Although millimeter-wave (mmWave) technology has high potential for both industries and users, there are no developed techniques for evaluating spectra suppressing the unwanted response generated in the measurement system. In addition, the commercialized spectrum analyser for this frequency band cannot accurately measure low power input signals due to the insufficient dynamic range while high power signals are input to the spectrum analyser simultaneously. This document describes the high-dynamic-range spectrum measurement system with low unwanted response for measuring spectra in the frequency range 140 GHz to 300 GHz, and proposes an mmWave pre-selector to suppress the unwanted response generated in the measurement system.

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TRANSMITTING AND RECEIVING EQUIPMENT FOR RADIOCOMMUNICATION – RADIO SPECTRUM MEASUREMENT METHOD – 300-GHz SPECTRUM MEASUREMENT EQUIPMENT

1 Scope

This document specifies spectrum measurement methods in the frequency range 140 GHz to 300 GHz. This document also provides background information, describes system configurations, key mmWave pre-selector technology, as well as some examples of the spurious measurement of antennas under test (AUTs) over the air.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.2 Abbreviated terms

mmWave	millimetre-wave
ACLR	adjacent channel leakage power ratio
ATT	attenuator
AUT	antenna under test
DANL	displayed average noise level
DUT	device under test
FCC	Federal Communications Commission
FOD	foreign object debris
IF	intermediate frequency
IR	infra-red
LIDAR	light detection and ranging
LO	local oscillator
OOK	on-off-keying
OTA	over the air
PC	personal computer
PHY	physical layer
QAM	quadrature amplitude modulation