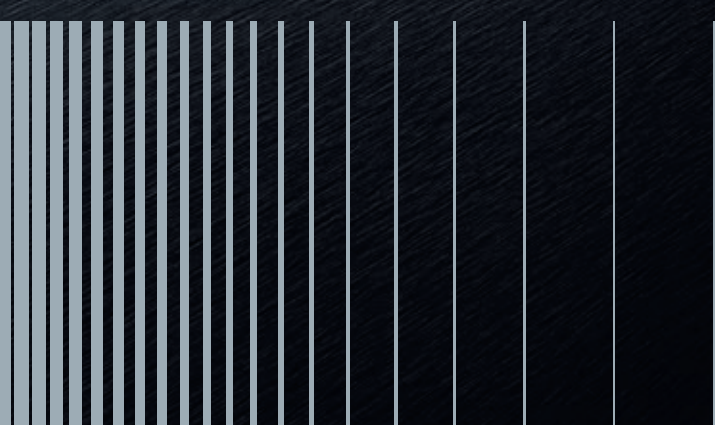


Radio equipment directive for sound and TV broadcast receivers

EN 303 340
EN 303 345
EN 303 372-2

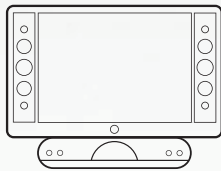


Your challenge

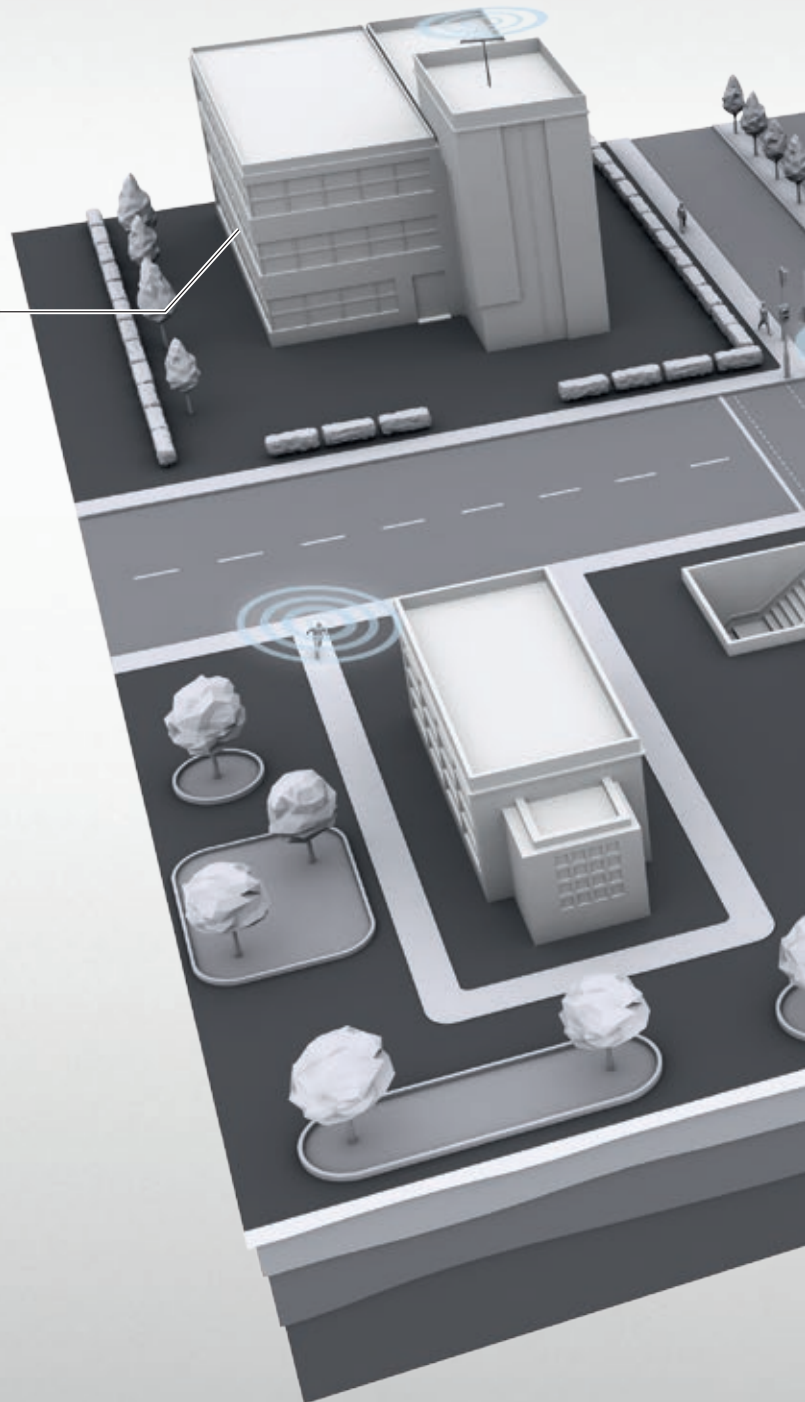
Radio spectrums have become increasingly crowded, and technologies compete for sufficient bandwidth to operate effectively. Furthermore, mobile communications frequencies are located in close proximity to the 800 MHz digital terrestrial television (DTT) frequency. With a guard band of 1 MHz between the top edge of DTT CH60 and the lower edge of the LTE base station transmissions, test cases in ETSI EN 303 340, EN 303 345 and EN 303 372-2 are designed to ensure an adequate level of immunity for digital broadcast radio broadcast receivers.

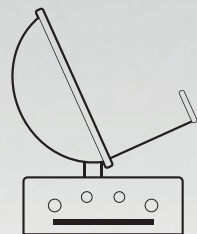
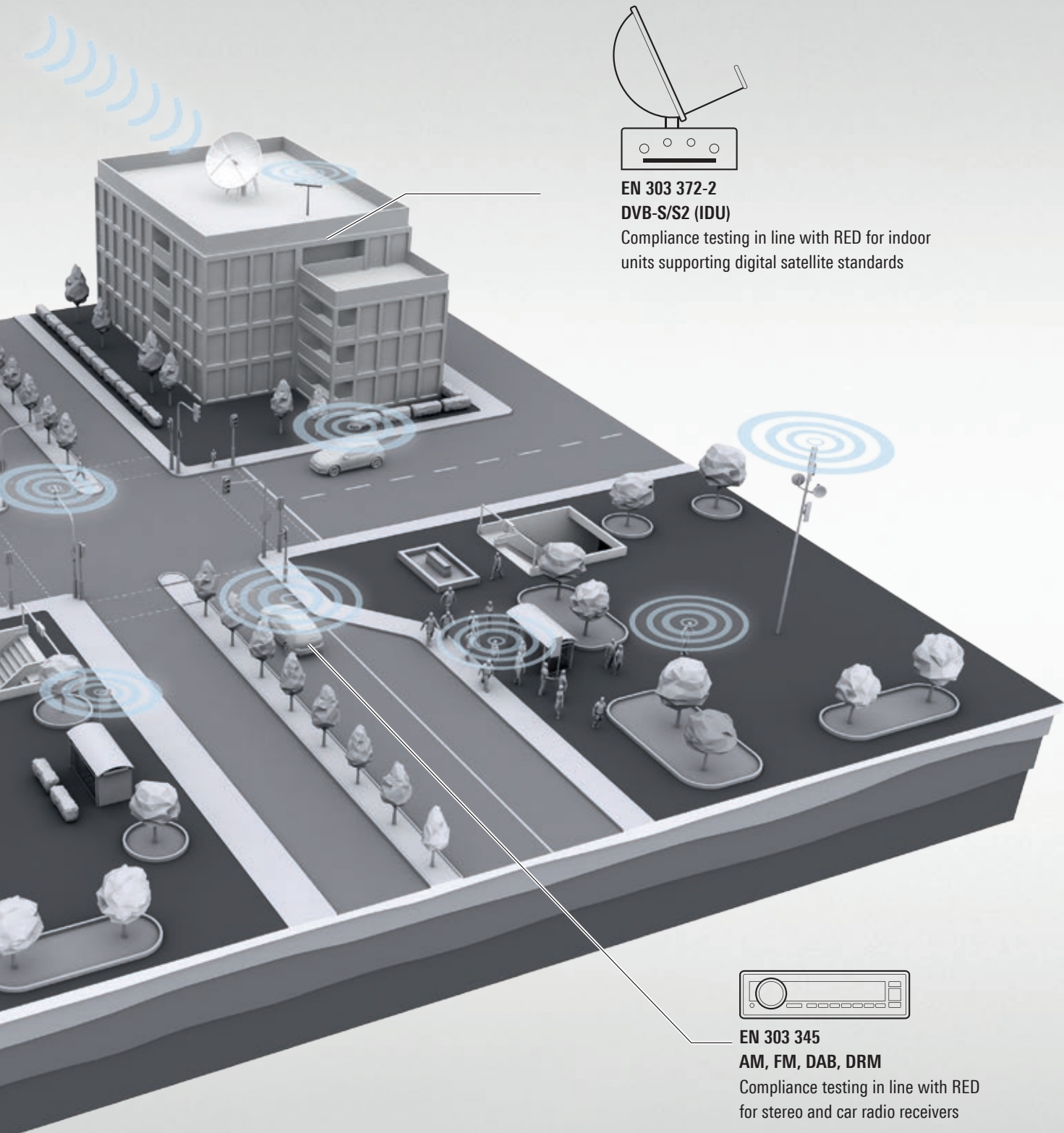
One of the key differences between the R&TTE directive and the new radio equipment directive (RED) is the inclusion of sound and TV broadcast receivers. The ETSI EN 303 340 standard is applicable to digital terrestrial television broadcast receivers supporting DVB-T and/or DVB-T2 signals. EN 303 345 applies to fixed and portable devices that receive analog radio services such as AM and FM or digital broadcast radio services such as DAB or DRM. EN 303 372-2 applies to indoor unit devices supporting DVB-S and DVB-S2 satellite broadcast signals.

Discover more at www.rohde-schwarz.com/red



EN 303 340
DVB-T/T2 + LTE
Compliance testing in line with RED
for TV sets and set-top boxes





EN 303 372-2
DVB-S/S2 (IDU)
Compliance testing in line with RED for indoor
units supporting digital satellite standards



EN 303 345
AM, FM, DAB, DRM
Compliance testing in line with RED
for stereo and car radio receivers

Introduction



The new radio equipment directive (RED) 2014/53/EU replaces the previous radio and telecommunications terminal equipment directive (RTTED), better known as R&TTE directive 1999/5/EC.

RED article 3.2 emphasizes the efficient use of spectrum as the essential requirement for future regulatory testing even more. This means that – for the first time – RED introduces regulatory performance requirements for radio transmitters and radio receivers at the same time.

Taking full effect since June 13, 2017, RED raises the requirements on radio equipment such as the following:

- Broadcast digital TV and radio receivers
- GSM and LTE receivers
- Satellite receivers (including GNSS)
- Any equipment that uses WLAN, Bluetooth® or ZigBee

As the market leader in EMC and regulatory testing, Rohde & Schwarz is your reliable partner, providing insight, expertise and the widest range of test and measurement solutions in this field.

With more than 70 subsidiaries and local representatives worldwide, Rohde & Schwarz offers local expertise, reliable services and on-site support – on a global scale.

Rohde & Schwarz is ready for RED.

EN 303 340 – digital terrestrial TV broadcast receivers

The EN 303 340 testing requirement applies to digital terrestrial television broadcast receivers fitted with an external antenna input (tuner port) capable of receiving DVB-T and/or DVB-T2 signals. This standard also considers interference from LTE transmissions in the 700 MHz and 800 MHz band and DTT transmissions in UHF band IV. The R&S®BTC is a single-box solution that fully covers the EN 303 340 testing requirements in article 3.2 of Directive 2014/53/EU.

Key facts

- ▮ Realtime coder for DVB-T/T2
- ▮ Integrated multimedia generator
- ▮ High spectral signal quality
- ▮ Arbitrary waveform generator
- ▮ Integrated power sensor
- ▮ HDMI and analog module support for video analysis and picture failure (PF) point detection
- ▮ All-in-one-box solution

EN 303 372-2 – satellite broadcast reception equipment (indoor unit)

The EN 303 372-2 testing requirement applies to indoor equipment supporting satellite broadcast reception with DVB-S and/or DVB-S2 digital modulation. Such receivers can either be equipped with an integral antenna or fitted with an external antenna input. The R&S®BTC is a single-box solution that fully covers the EN 303 372-2 testing requirements in article 3.2 of Directive 2014/53/EU.

Key facts

- ▮ Realtime coder for DVB-S/S2
- ▮ 2 RF outputs up to 6 GHz
- ▮ High spectral signal quality
- ▮ Arbitrary waveform generator
- ▮ Integrated power sensor
- ▮ HDMI and analog module support for video analysis and picture failure (PF) point detection
- ▮ All-in-one-box solution

For more information, visit our website
www.rohde-schwarz.com/red



R&S®BTC broadcast test center with DUT

EN 303 345 – broadcast sound receivers

The EN 303 345 testing requirement applies to radio broadcast receivers supporting analog AM/FM or DAB/DRM digital modulation. Such receivers can either be equipped with an integral antenna or fitted with an external antenna input. The R&S®BTC is a single-box solution that fully covers the EN 303 345 testing requirements in article 3.2 of Directive 2014/53/EU.

The following broadcast radio modulation methods are considered in Europe:

- ▮ Amplitude modulation (AM), with or without amplitude modulation signal system (AMSS)
- ▮ Frequency modulation (FM), with or without radio data system (RDS)
- ▮ Digital audio broadcasting (DAB)
- ▮ Digital radio mondiale (DRM)

Key facts

- ▮ Realtime coder for AM, FM, DAB and DRM
- ▮ 2 RF output signal generator
- ▮ Integrated audio player and multimedia generator
- ▮ High spectral signal quality
- ▮ Arbitrary waveform generator
- ▮ Integrated power sensor
- ▮ Analog module support for audio analysis
- ▮ Quasi-peak detector and CCIR 468 weighting support
- ▮ All-in-one-box solution

Car radios supporting AM, FM, DAB or DRM are also subject to RED testing



Test automation and reporting software

In line with EN 303 340, EN 303 345 and EN 303 272-2

The R&S®BTC can be used together with a software tool and certain accessories to provide the user with test automation and test reporting capabilities. The software features a user-friendly interface and unique test configurations such as compensation loss, multiple interfering signals and smart learning of DUT control via infrared remote control. Used together with the R&S®BTC, it offers users easy execution and management of test cases for product validation and production testing.

Key facts

- ▮ Supports all test cases for EN 303 340, EN 303 345 and EN 303 372-2
- ▮ Automated detection of picture failure point for video and audio
- ▮ Optional camera solution for automated error detection on TV screens
- ▮ Intuitive state-of-the-art GUI with signal path loss compensation
- ▮ Reproducible and consistent test results
- ▮ Future-proof solution since more standards can easily be integrated into the software solution

For more information, visit our website

www.rohde-schwarz.com/red

R&S®BTC broadcast test center with DUT and accessories during test automation with the R&S®TA-TRS sequencer software



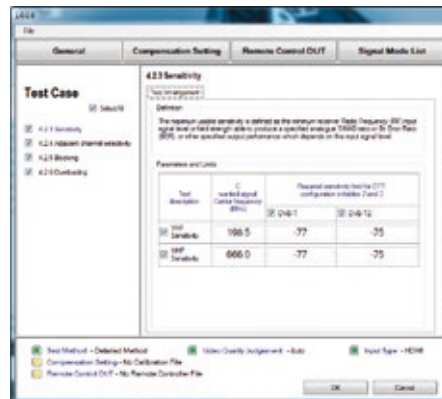
Test cases*

The test sequencer and reporting tool software covers the test cases listed in the table as stipulated by the standards. Required test cases and method of parametrization depend on the DUT characteristics and technology used.

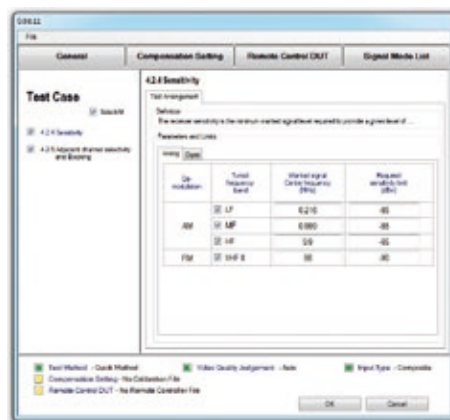
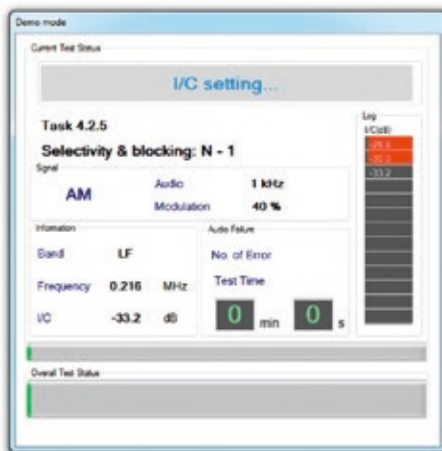
EN 303 340 (v1.1.2)	Availability in test sequencer software**
Receiver sensitivity	Yes
Receiver adjacent channel selectivity	Yes
Receiver blocking	Yes
Receiver overloading	Yes
Unwanted emissions in the spurious domain	No, but available in RSE test system in line with EN 55032
EN 303 345*	Availability in test sequencer software**
Sensitivity	Yes
Adjacent channel selectivity and blocking	Yes
Unwanted emissions in the spurious domain	No, but available in RSE test system in line with EN 55032
EN 303 340	Availability in test sequencer software**
Adjacent signal sensitivity	Yes
Dynamic range	Yes

* All information stated in the brochure is correct at time of printing and subject to change without notice

** Test sequencer software currently supports only the conducted test method



EN 303 340 test mode



EN 303 345 test mode

Service that adds value

- | Worldwide
- | Local und personalized
- | Customized and flexibel
- | Uncompromising quality
- | Long-term dependability

About Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, this independent company has an extensive sales and service network and is present in more than 70 countries. The electronics group is among the world market leaders in its established business fields. The company is headquartered in Munich, Germany. It also has regional headquarters in Singapore and Columbia, Maryland, USA, to manage its operations in these regions.

Sustainable product design

- | Environmental compatibility and eco-footprint
- | Energy efficiency and low emissions
- | Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

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www.rohde-schwarz.com

Rohde & Schwarz training

www.training.rohde-schwarz.com

Regional contact

- | Europe, Africa, Middle East | +49 89 4129 12345
customersupport@rohde-schwarz.com
- | North America | 1 888 TEST RSA (1 888 837 87 72)
customer.support@rsa.rohde-schwarz.com
- | Latin America | +1 410 910 79 88
customersupport.la@rohde-schwarz.com
- | Asia Pacific | +65 65 13 04 88
customersupport.asia@rohde-schwarz.com
- | China | +86 800 810 82 28 | +86 400 650 58 96
customersupport.china@rohde-schwarz.com

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