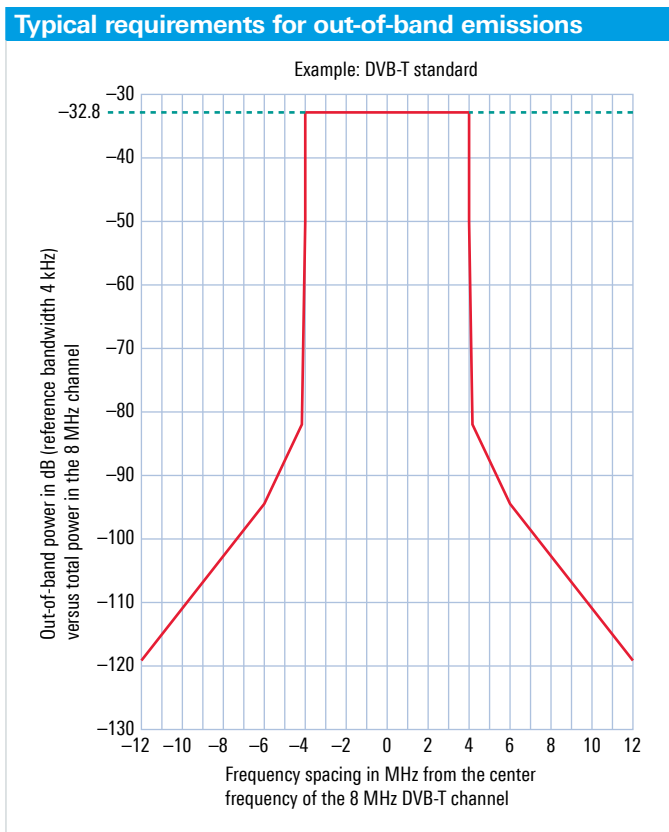


Easy testing of TV transmitters' out-of-band emissions

Automatic generation and use of transducer factors makes it possible to test out-of-band emissions with the R&S®ETH handheld TV analyzer, without an external bandstop filter.



Your task

During commissioning, maintenance and service, the essential operating parameters of a TV transmitter must be checked. One particularly demanding task is to measure out-of-band emissions, i.e. signal components in the transmitter's adjacent channels. High-power and low-power transmitters have similar specifications for this measurement. However, since low-power transmitters are often located at difficult-to-access sites, portable measuring equipment is a major advantage.

T&M solution

The transducer measurement function of the R&S®ETH handheld TV analyzer enables users to check out-of-band emissions without an expensive and unwieldy bandstop filter. Predefined limit lines for the spectrum masks make it very easy to evaluate the measurement.

The compact, portable instrument also offers a spectrum analyzer, network analyzer, power meter and – for selected TV standards – even a complete test receiver. For example, all required acceptance test measurements on the transmitter are supported for DVB-T and ISDB-T.

Application

The relevant test specifications for digital TV transmitters usually require the following measurements:

- Output power
- MER of the OFDM signal and the individual carriers
- Bit error ratio
- Out-of-band emissions

A directional coupler, with measurement points for the forward and the reflected power, is located between the transmit amplifiers and the transmitter's mask filter. Using the R&S®ETH, all measurements mentioned above, except for out-of-band emissions, can be measured directly on the forward power measurement point. Out-of-band emissions must be measured downstream of the mask filter.

But the requirements are so high that even high-end spectrum analyzers can only verify these emissions if the transmit signal is suppressed with a bandstop filter. Assistance is provided by the R&S®ETH transducer function, which multiplies the measured spectrum by a transducer factor.

The transducer measurement function is a new feature which stores a measured frequency response as a transducer for use in subsequent measurements. This function requires an R&S®ETH with tracking generator (model .14 or .18).

The measurement has the following steps:

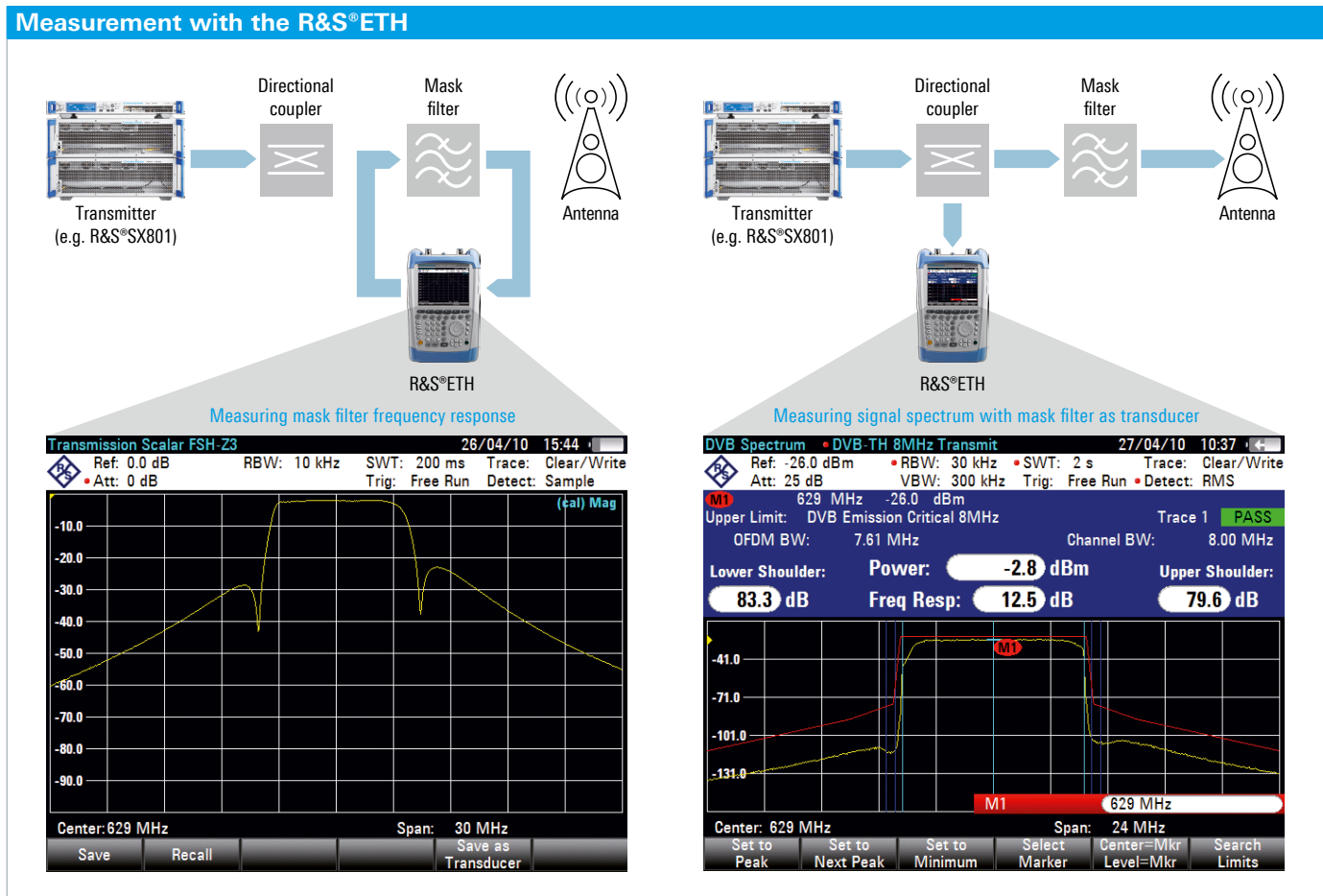
1. In the network analyzer mode, the filter trace of the mask filter in the useful channel and its two adjacent channels is measured.
2. The "Save as Transducer" function converts the measured filter trace to a transducer data record with measurement points throughout the measured frequency band. The mask filter is a passive element whose performance does not change over time. Therefore, the measurement must be carried out only once, and the stored transducer can be used again and again, also in R&S®ETH models without a tracking generator.
3. To measure out-of-band emissions, the R&S®ETH needs to be connected to the directional coupler.

4. Activating the specially provided second transducer with the previously recorded data record ensures that the displayed spectrum and the measured signal power match the actual values downstream of the mask filter.
5. The R&S®ETH "Limit Lines" function displays the permissible limits for the TV signal's spectrum mask. The R&S®ETH continuously checks whether the spectrum mask is within the limits, and immediately shows "pass" or "fail". The limits for critical and uncritical masks are predefined and can simply be loaded.

All described steps can be carried out with a single instrument, the R&S®ETH. Data processing on a PC is not necessary. The R&S®ETH handheld TV analyzer enables users to completely test a DVB-T or ISDB-T transmitter, including out-of-band emissions – easily, accurately and without external accessories.

See also:

www2.rohde-schwarz.com/product/eth.html



Rohde & Schwarz GmbH & Co. KG

Europe, Africa, Middle East +49 89 4129 137 74
 customersupport@rohde-schwarz.com
 North America 1 888 TEST RSA (1 888 837 8772)
 customer.support@rsa.rohde-schwarz.com
 Latin America +1 410 910 7988 | customersupport.la@rohde-schwarz.com
 Asia/Pacific +65 65 13 04 88 | customersupport.asia@rohde-schwarz.com
 www.rohde-schwarz.com

R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG
 Trade names are trademarks of the owners | Printed in Germany (sv)
 Easy testing of out-of-band-emissions | PD 5214.4536.92 | Version 01.00
 August 2010 | Data without tolerance limits is not binding | Subject to change
 © 2010 Rohde & Schwarz GmbH & Co. KG | 81671 München, Germany



5214453692