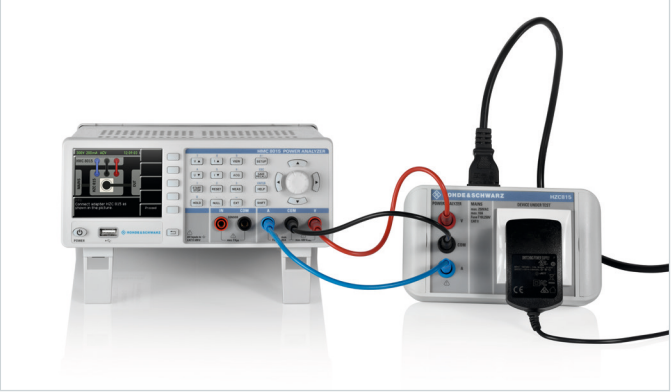
Measurement of conducted emission limits in line with IEC/EN 61000-3-2

Most of today's electronic devices draw non-sinusoidal current. This gives rise to harmonic currents injected back into the public supply system. These need to be checked on all devices with the CE marking.



Typical test setup with the R&S®HMC8015 power analyzer and R&S®HZC815 socket adapter

Your task

Modern electronic devices use switched-mode power supplies that can generate strong harmonic currents which are injected back into the mains supply network. The limits for harmonic current emissions are defined in IEC/EN 61000-3-2, divided into four equipment classes. Based on the class and cycle time, the harmonic currents must be analyzed over precisely defined time periods and comply with the specified limits.

To achieve the required accuracy up to the 40th harmonic, automated test cases are essential.

T&M solution

The R&S®HMC8015 power analyzer provides seamless acquisition and realtime signal processing and accelerates the measurement. Precise measurement ensures that compliance with the standard can be determined, even for critical designs.

The DUT is simply and safely plugged in to the R&S®HMC8015 through the optional R&S®HZC815 mains adapter. For this purpose, the cables supplied with the adapter are connected to the sockets on the front of the instrument. Various country-specific adapter models are available to enable connection in different countries.

Application

The setup wizard eliminates guesswork

The setup wizard in the R&S®HMC8015 guides the user through the measurement and configures the required instrument parameters. That minimizes measurement errors and makes results quickly visible. The measurement process is fully automatic. No prior knowledge of the above-mentioned standards is necessary.

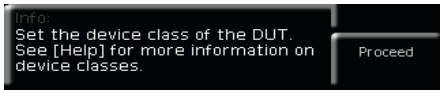
All environmental variables, such as the supply voltage and mains quality, are constantly monitored and displayed during the measurement. Deviations are color-coded.

The measurement steps

- Select the IEC/EN 6100-3-2 standard in the wizard (1)
- Set the correct mains voltage and mains frequency (manually, or automatically based on the selected region) and set the expected power consumption of the DUT (2)
- Select the right device class (3)
- Set the crest factor and maximum current (RMS) (4)
- If known, set the current consumption pattern (static, cyclic or variable) in order to speed up the measurement (5)
- Connect the DUT as shown in the wizard and put the DUT in the desired operating mode (6)
- The results, including min. and max. values, are clearly displayed during and at the end of the measurement (7).

1

2



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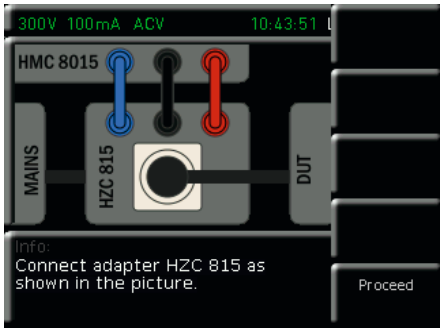

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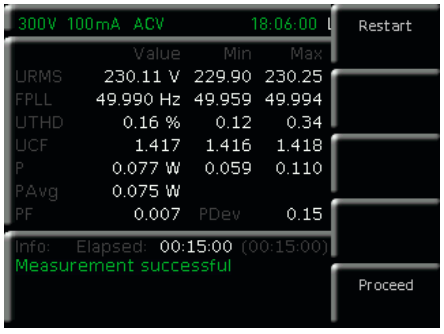
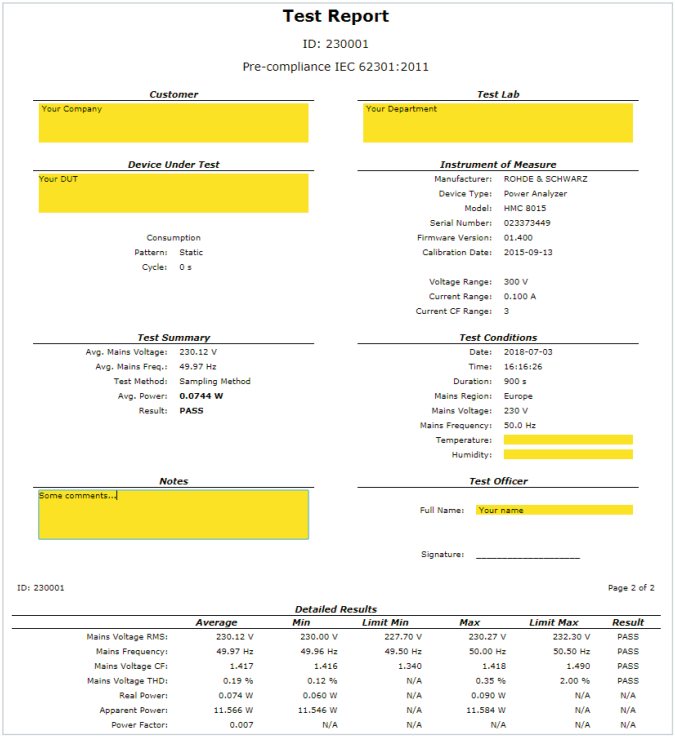


7

The wizard guides the user through the measurement.

Test report

When the measurement is finished, the results can be saved to a USB flash drive. An interactive HTML form is created that can be filled in with customer data to adapt the test report to your specific needs.



Test Report

ID: 230001

Pre-compliance IEC 62301:2011

Customer: Your Company

Test Lab: Your Department

Device Under Test: Your DUT

Consumption
Pattern: Static
Cycle: 0 s

Instrument of Measure
Manufacturer: ROHDE & SCHWARZ
Device Type: Power Analyzer
Model: HMC 8015
Serial Number: 023373449
Firmware Version: 01.400
Calibration Date: 2015-09-13

Voltage Range: 300 V
Current Range: 0.100 A
Current CF Range: 3

Test Summary
Avg. Mains Voltage: 230.12 V
Avg. Mains Freq.: 49.97 Hz
Test Method: Sampling Method
Avg. Power: **0.0744 W**
Result: **PASS**

Test Conditions
Date: 2018-07-03
Time: 16:16:26
Duration: 900 s
Mains Region: Europe
Mains Voltage: 230 V
Mains Frequency: 50.0 Hz
Temperature:
Humidity:

Notes: Some comments...

Test Officer
Full Name: Your name
Signature: _____

ID: 230001 Page 2 of 2

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.12 V	230.00 V	227.70 V	230.27 V	232.30 V	PASS
Mains Frequency:	49.97 Hz	49.96 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.19 %	0.12 %	N/A	0.35 %	2.00 %	PASS
Real Power:	0.074 W	0.060 W	N/A	0.090 W	N/A	N/A
Apparent Power:	11.566 W	11.546 W	N/A	11.584 W	N/A	N/A
Power Factor:	0.007	N/A	N/A	N/A	N/A	N/A

Designation	Type	Order No.
Base unit (incl. power cable and manual)		
Power analyzer	R&S®HMC8015	3593.8646.02
Power analyzer, incl. IEEE-488 (GPIB) interface	R&S®HMC8015-G	3593.8875.02
Software options		
Compliance test		
Direct from factory	HOC153	3622.3559.02
Voucher upgrade	HVC153	3622.3794.02
Advanced analysis		
Direct from factory	HOC151	3622.0789.02
Voucher upgrade	HVC151	3622.0795.02
Socket adapters for R&S®HMC8015		
EU plug	R&S®HZC815-EU	3593.8850.02
GB plug	R&S®HZC815-GB	3622.2246.02
USA plug	R&S®HZC815-USA	3622.2252.02
CHN/AUS plug	R&S®HZC815-CHN	3623.3952.02

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Measurement of conducted emission limits in line with IEC/EN 61000-3-2
Data without tolerance limits is not binding | Subject to change

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