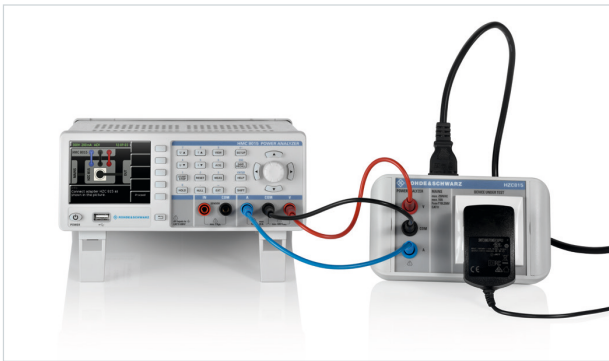# Measurement of standby power consumption in line with IEC 62301 and EN 50564

Today virtually every electronic device has a standby mode. Power consumption is regulated in most countries by increasingly stringent limits. This makes standardized power measurement essential.

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

Your task

State-of-the-art power supply circuits offer different operating modes that adapt to the actual load case to achieve very high efficiency. That makes current consumption highly distorted and irregular. This must be taken into account in power measurement and correctly calculated.

The relevant standards (IEC 62301 and EN 50564) define the execution and calculation methods, including the required accuracy. However, the required methods are too complex and time-consuming for manual implementation.

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 environment variables, such as the supply voltage and mains quality, are constantly monitored and displayed during the measurement. Deviations are marked in color.
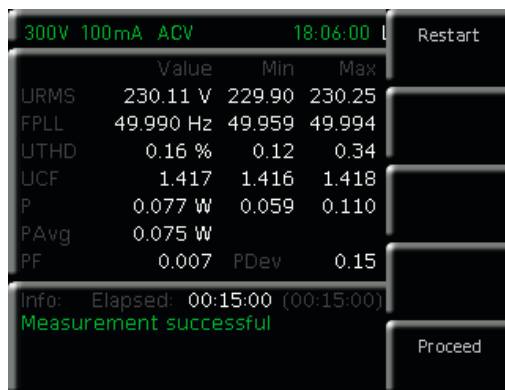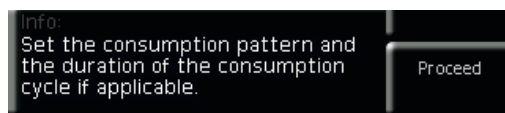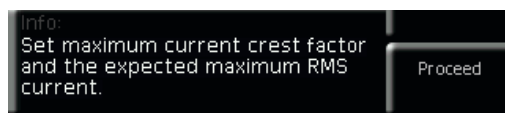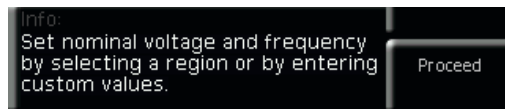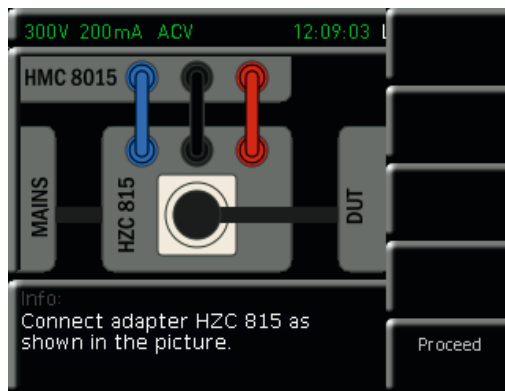
The measurement in detail

First the DUT is connected according to the instructions from the wizard and put in the desired operating mode (1).

Selection of the right mains voltage and frequency is supported by a country library. The values can also be set individually for special cases (2).

ROHDE & SCHWARZ

The next step is to set the current range and crest factor according to the expected power consumption of the device (3).

Finally, the type of current consumption can be set to static, cyclic or variable if this is known (4). That speeds up the measurement. In case of a wrong setting, the R&S®HMC8015 detects the different behavior and still measures correctly.

During the measurement, the status display clearly shows all measurement values and their range of variation (5).

1


```
300V 200mA  ACV              12:09:03
HMC 8015

MAINS   HZC 815         DUT

Info:
Connect adapter HZC 815 as
shown in the picture.
                                    Proceed
```

2


```
Info:
Set nominal voltage and frequency
by selecting a region or by entering
custom values.
                                    Proceed
```

3


```
Info:
Set maximum current crest factor
and the expected maximum RMS
current.
                                    Proceed
```

4


```
Info:
Set the consumption pattern and
the duration of the consumption
cycle if applicable.
                                    Proceed
```

5


```
300V 100mA  ACV              18:06:00      Restart
                Value     Min      Max
URMS       230.11 V   229.90   230.25
FPLL     49.990 Hz   49.959   49.994
UTHD        0.16 %     0.12     0.34
UCF          1.417    1.416    1.418
P          0.077 W    0.059    0.110
PAvg       0.075 W
PF           0.007    PDev     0.15
Info:  Elapsed: 00:15:00 (00:15:00)
Measurement successful
                                    Proceed
```

The wizard guides the user through the measurement

Test report

After completion of the measurement, the results can be saved to a USB flash drive. An interactive HTML form is created that can be filled in with customer data, giving you a test report matched to your needs.

Test Report
ID: 230001
Pre-compliance IEC 62301:2011

Customer		Test Lab	
Your Company		Your Department	

Device Under Test — **Instrument of Measure**

		Manufacturer:	ROHDE & SCHWARZ
Your DUT		Device Type:	Power Analyzer
		Model:	HMC 8015
		Serial Number:	023373449
Consumption		Firmware Version:	01.400
Pattern:	Static	Calibration Date:	2015-09-13
Cycle:	0 s		
		Voltage Range:	300 V
		Current Range:	0.100 A
		Current CF Range:	3

Test Summary — **Test Conditions**

Avg. Mains Voltage:	230.12 V	Date:	2018-07-03
Avg. Mains Freq.:	49.97 Hz	Time:	16:16:26
Test Method:	Sampling Method	Duration:	900 s
Avg. Power:	0.0744 W	Mains Region:	Europe
Result:	PASS	Mains Voltage:	230 V
		Mains Frequency:	50.0 Hz
		Temperature:	
		Humidity:	

Notes — **Test Officer**

Some comments...	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, with IEEE-488 (GPIB) interface	R&S®HMC8015-G	3593.8875.02
Software options		
Compliance test, factory direct order	HOC153	3622.3559.02
Compliance test, voucher upgrade	HVC153	3622.3794.02
Mains adapters for R&S®HMC8015		
Mains adapter, EU connector	R&S®HZC815-EU	3593.8850.02
Mains adapter, GB connector	R&S®HZC815-GB	3622.2246.02
Mains adapter, US connector	R&S®HZC815-USA	3622.2252.02
Mains adapter, CHN/AUS connector	R&S®HZC815-CHN	3623.3952.02