

## Harmonics and Flicker Generator HFG01

### Introduction

The Harmonics & Flicker Generator (HFG01) has been designed by York EMC Services Ltd for the purpose of verifying harmonic and flicker test equipment. Until now there has been no easy and reliable way to externally check the performance of the measurement system to the EN/IEC 61000-3-2 harmonics and EN/IEC 61000-3-3 flicker standards.

The HFG01 allows the user to periodically verify their test equipment, ensuring compliance with standards and laboratory quality procedures.

The unit provides a series of harmonic and flicker disturbances of a nominal but stable level. The generator may therefore be used to verify the stability of a measurement system. Alternatively due to its stability it may be used as a transfer standard from a calibrated system.

### Description

The unit is a standalone device and requires no additional equipment. A four way rotary switch selects the mode of operation. The modes are defined by firmware running on a micro controller. This will enable the characteristics of the generator to be reprogrammed in line with future changes to the standards.

### Operation

The HFG01 simulates equipment under test (EUT), generating known, repeatable levels of harmonic and flicker disturbance in one of four modes of operation.

- ❖ In Steady State harmonics (SS) mode, a harmonic-rich

current waveform is generated, allowing the harmonic measurement system to be verified. In this mode the generator simulates Class D equipment and produces harmonic levels that will fail the EN/IEC61000-3-2 pre A14 and A14 Class D limits. This mode will pass EN/IEC61000-3-2 pre A14 and A14 Class A limits.

- ❖ Fluctuating harmonics (FL) mode alternates between two distinct current waveforms over a 10s cycle. This mode again fails the EN/IEC61000-3-2 pre A14 Class D limits but passes the A14 limits.
- ❖ In flicker test mode, a fixed level of mains disturbance is generated at a rate of 8.33Hz or 1Hz. When tested to EN/IEC61000-3-3, the 8.33Hz rate produces a Pst value >1, which lies above the limit line. The 1Hz setting produces a Pst value <1, which falls below the same limit.



*For further information or advice contact:*

**York EMC Services Ltd**

University of York, Heslington, York YO10 5DD, UK

Tele +44 (0) 1904 434440 · Fax +44 (0) 1904 434434

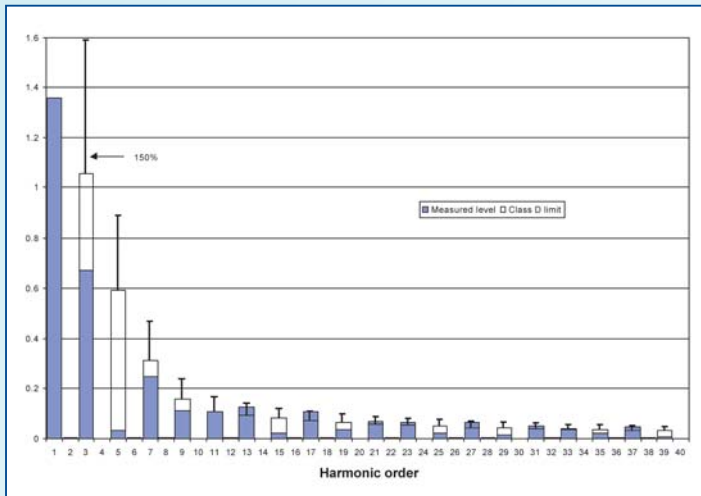
email : [enquiry@yorkemc.co.uk](mailto:enquiry@yorkemc.co.uk) · Web <http://www.yorkemc.co.uk>

## Harmonics and Flicker Generator HFG01

### Technical details

Harmonic generation modes:

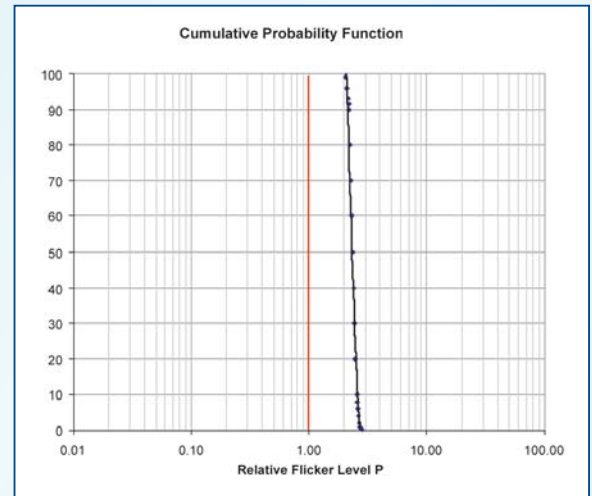
- SS Simulated Class D EUT
- FL Alternating between Class D to Class A



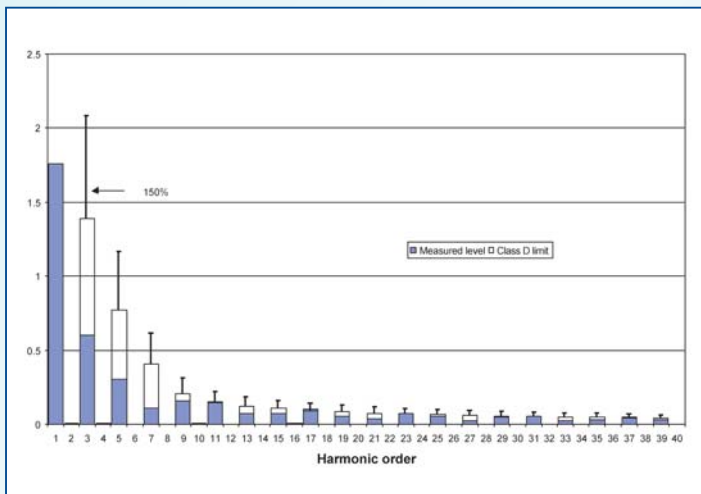
Steady State Harmonics  
EN61000-3-2 (1995) Class D Fail.  
EN61000-3-2 (2000) Class D Fail

Flicker generation modes:

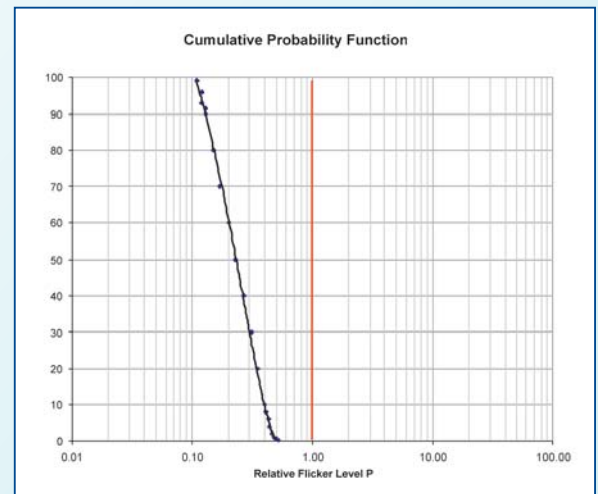
- 8.33Hz Pst > 1.0 typ.
- 1Hz Pst < 1.0 typ.



Flicker set to 8.33 Hz Rate  
EN61000-3-3 (1995) Fail



Fluctuating Harmonics  
EN61000-3-2 (2000) Class D Pass



Flicker set to 1Hz  
EN61000-3-3 (1995) Pass

**Power Source:**  
230Vac, 50Hz, 400W (max)

**Dimensions:**  
Length 330mm  
Width 320mm  
Height 170mm  
Weight 4kg

**Compliance:**  
LV Safety 73/23/EEC  
EMC 89/336/EEC