

A 12 KW wideband power amplifier for strong field levels

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Abstract— Many EMC applications (automotive, military...) request more and more field level in order to realize immunity testing. Prana has developed and manufactured a new strong wideband power amplifier in the bandwidth 100 kHz - 225 MHz, named GN 12000.

Keywords: power amplifier, wideband, strong field, EMC, immunity

I. INTRODUCTION

Prana, French company, belongs to the worldwide leading manufacturers of RF Power Amplifiers for Broadband applications such as EMC testing, instrumentation and radio-communication. The Prana product lines are all solid state and cover a frequency range from 10 kHz to 6 GHz with power levels up to 12 kW: GN 12000.

This amplifier provides a CW typical power of 12 kW between 100 kHz and 225 MHz. The class A of the amplifier allows providing the output power at 1 dB of compression with a harmonic ratio less than -20 dBc.

Integrated in an EMC test system, the goal is to obtain an electric field level higher than 150 V/m in the frequencies (100 kHz – 225 MHz).

II. GN 12000 PRESENTATION AND MEASUREMENTS



Figure 1. Prana amplifier GN 12000

The GN 12000 design is modular and modern (figure 1). It is composed of 16 identical power modules, 4 intermediate combiners, 1 final combiner and 1 coupler. The GN 12000 was designed for minimal maintenance: easy accessibility of all sub systems and all the modules can be changed each other. This design allows a fast and efficient after sales service in the world.

One power module provides a typical power of 1 kW. The power modules are composed of LDMOS transistors polarised in Class A in order to obtain both an important output power and a high linearity.

The GN 12000 was tested in the Prana laboratory with a 50 ohms water cooled load. The output power has been measured at 1 dB (green curve – figure 2) of compression and 3 dB of compression (red curve - figure 2).

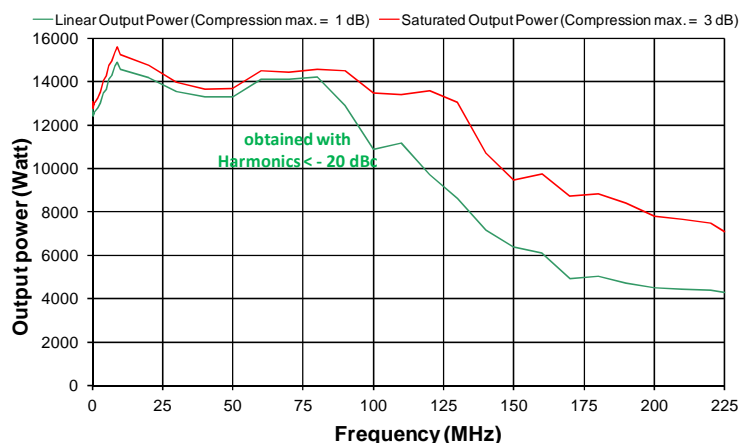


Figure 2. Output power at 1 dB and 3 dB of compression

This high power level is dedicated to EMC application for automotive. It was also tested in a famous automotive laboratory in German. The results will be presented in the final paper.

III. CONCLUSION

This amplifier GN 12000 was tested in different Automotive EMC test systems: combined to a stripline antenna and to a Log-periodical Antenna. These tests validate the GN 12000 capacity to generate strong field levels (> 150 V/m) and this reliability with high mismatched loads.