Mesoband and Hyperband Immunity Test Generator and Standards

R. Hoad, L. Chatt, B. Petit, T. Rees and G. Eastwood
QinetiQ Ltd.,
Cody Technology Park, Farnborough, Hampshire,
GU14 0LX, UK
rhoad@qinetiq.com

Abstract— QinetiQ are developing a radiated Mesoband and Hyperband immunity test generator in order to comply with emerging standardized test methods. This paper provides an update on the development of the test generator and gives an update on development of relevant standards.

Keywords-component; *HPEM, IEMI and EMC*

I. INTRODUCTION

Mil-Std 464C specifies narrowband and wideband High Power Microwave (HPM) environments [1]. NATO AECTP Leaflet 257 is in development and will soon publish a High Power Radio Frequency (HPRF) Environment [2]. The International Electrotechnical Commission (IEC) Sub Committee (SC) 77C has published an Intentional Electromagnetic Interference (IEMI) environment [3] and is working on the development of Mesoband and Hyperband immunity test methods [4].

A way to simulate Mesoband and Hyperband radiated environments is required to enable immunity testing. The test generator must provide a consistent and repeatable environment in order to minimize test uncertainties. Additionally, a range of environments and parameters are required to be tested.

II. DISCUSSION

Full scale simulators, capable of producing intense (10's kV/m) environments are available and have been summarized within a compendium [5]. However, often these sources cannot offer a wide variety of threat environments in one location, and they tend to have a limited parameter range (fixed frequency, pulse widths etc.). Practicalities mean that tests can be expensive to carry out and the repeatability of these very high power sources is questionable.

For a given HPRF/IEMI immunity test it is not necessary to 'test to effect' and therefore the immunity test level can be much lower than the effect level. Ideally testing should be capable of being accommodated within standard EMC chambers for equipment tests at least. The reduced range (test source to equipment under test distance) and lower E-field magnitude requirement means that a different approach can be taken for the specification of the immunity test simulator.

Additionally it is important to use as methods close to extant EMC type immunity test methods as possible so that the testing can be cost effective.

Figure 1 shows the QinetiQ PULSR Mesoband and Hyperband immunity test generator within a Semi-Anechoic Chamber.

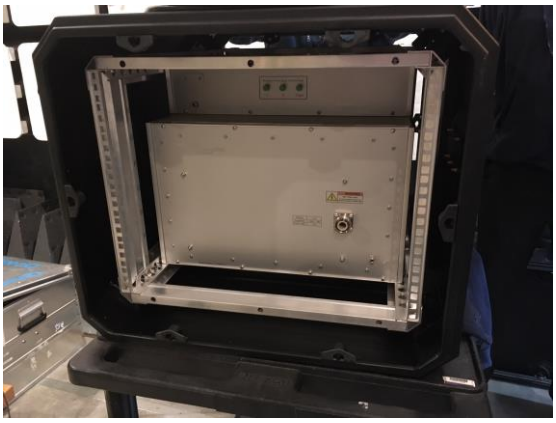

Figure 1. QinetiQ PULSR Hyperband and Mesoband immunity test generator

This paper will discuss;

- Derivation and definition of test levels and other waveform parameters;
- Definition of the test environment and test set-up;
- Aspects of the QinetiQ PULSR immunity test generator

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