

# AMTA Special Session on Low Frequency Antenna Measurements

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8 April 2014 – 11:00 – 12:40

Room Oceania

This interactive session will focus on performing low frequency antenna measurements in the UHF band known to be cumbersome due to reflections. Selected speakers from industry will present techniques describing indoor measurements (near-field and compact range). Additionally source and chamber design methodologies will also form part of the discussion. The session will conclude with a technical panel taking questions from the floor.

## Chairs:

Dr Luca Salghetti Drioli (ESA/ESTEC)

Dr Carlo Rizzo (Antenna Systems Solutions)

## Programme:

### Low frequency antenna measurement techniques

*Per Olav Iversen (MVG Group)*

**Abstract:** There are a wide range of applications requiring antenna measurements in the VHF and lower UHF bands which present some real practical technical challenges due to the correspondingly long wavelengths. Such applications include Radio, Remote Sensing, Cellular Wireless Communications, Medical Devices, Military RADARs and mobile Communications. For security, interference, and accuracy considerations, it is generally desirable to do such measurements indoors in a shielded environment. The long wavelengths result in some challenging requirements on the required test components and chambers in order to make those compatible with practical cost effective indoor testing. This paper will discuss some of the experience of MVG related to chambers, absorber, measurement antennas, data acquisition and processing techniques that are used to get the highest performance from your low frequency test chamber.

### Recent developments of feeds for low frequency antenna measurements

*Dr Vicente Rodriguez (ETS Lindgren)*

**Abstract:** The presentation shows some of the developments of feeds for low frequency testing of both antenna patterns as well as RCS. It also includes a section on the issues of chamber design for these low frequencies and integration of antennas into these chambers for good quiet zone performance.

## **Modeling of Wedge Absorbers by a Semi-analytical Full-wave Method; High and Low Frequency Considerations**

*Dr. Amin Enayati (E&C Anechoic Chambers)*

**Abstract:** Among different types of absorbers being used for the lining of anechoic chambers, Wedge and Pyramidal absorbers are the most common ones.

As these absorbers possess one- and two-dimensional periodic configurations, a transmission-line method has been introduced to solve the problem of plane-wave impinging on an infinite wall lined with them. The method has been implemented to model the Wedge-type absorbers giving more in-depth understanding of their behaviour. Moreover, the simulation results are being compared with the measurement results to investigate the Wedge absorber behaviour at high and low frequencies.

## **Compact Ranges in Low Frequency Applications**

*Marcel Boumans (Antenna Measurement Experts GmbH)*

**Abstract:** Rolled and Serrated Edge Compact Ranges are well established instruments to make far field antenna measurements. In particular at the low frequency end the compact range reflector is considered to be the limiting factor, but also other system aspects, like chamber layout, feed design and feed leakage into the quiet zone need at least as much design attention to get a good low frequency measurement system.