

UK GTEM User Group

Minutes of the meeting held at Measurement Technology Ltd on 15th November 2005

Present

Roger Dixon (RD)	Sponsored by Aeroflex Ltd [Chairman]
Ian Alderman (IA)	Consultant [Secretary]
John Wombwell (JW)	EMC Hire
Tian Loh	NPL
Howard Chetwin (HC)	MTL
Sean Saint	MTL
Richard Neyton (RN)	Apollo
Farquhar Galbraith (FG)	The EMC Centre (Paisley) Ltd
Geog Hahn	MTL
Neil Coote	Nokia
Dave Flynn	EMC Journal
Ivan Yallup	Ampy Automation
Richard Marshall	Consultant
Martin Wiles	ETS Lindgren
Kris Cadman	Consultant

Apologies received

Martin Alexander (MA)	NPL
Andy Marvin	York University
Andy Perkins	Schaffner EMC
Harbinder Bharj	BRE
Balpinder Padam	BRE
Eddie Veater	UKAS
Angela Nothofer (AN)	Nottingham University
Joe Wilkinson (JWi)	The EMC Centre (Paisley) Ltd
Stuart Bright	Echelon
Alan Hutley (AH)	Nutwood UK Ltd
Colin Howes	Doro UK Ltd
Tim Harrington	FCC
Tim Hague	EMV

1 Chairman opens meeting

The Chairman (RD) opened the meeting and welcomed all attending members.

2 Minutes Of The Last Meeting

The minutes of the July meeting had been circulated and were accepted.

3. Matters arising were:

- GTEM Website: AH will re-instate the web site when more information is forthcoming. RN has not received any submissions since the last meeting. RM suggested using a link to the IEE PN EMC web pages which would be interested in any GTEM material.
- FG updated the group with phone contact details for the EMC Centre (Paisley) Ltd (0141 886 7300)

- RadiSense EM Probe: RD mentioned a slight operational problem with the probe system concerning the interlock micro-switch on the rear of the unit which can be a source of frustration.
- An EMCO 5311 GTEM complete with immunity system is available from a company who no longer need it members to contact John Wombwell for further details. ..as reported last time is still available, also a Rayproof 750 cell has become available as well.
- Election of Chairman – RD reported that Aeroflex had kindly agreed to sponsor him on the basis of 3 meetings over the next 12 months. So the need for membership fees is no longer required.
- IEC61000-4-20 now in its 'Maintenance Cycle'. AN has sent in minutes. Next meeting is in the UK 9th/10th Feb probably in York. AN & Prof Andy Marvin are co-conveners representing IEC and Cenelec. CISPR A has met ad-hoc group to talk about terminology.
- Field Uniformity – 16 point cal proposal. None of the point data is to be thrown away but a statistical calculation to be performed on them
- York EMC Services - web site is advertising a workshop on "... Validation, Verification and Measurement Uncertainty..." which may be of interest to members.
- BSI meeting agreed to IEC61000-4-20 A1. Ed1. There is IEC/Cenelec parallel voting. Closing date for voting is next Feb 2006 so the decision will be put on the next agenda.
- CISPR A /JTF paper by Shinobu Ishigami, et al., 'Theoretical evaluation of the condition of EUT installation in a GTEM cell' 6pages:

RD reported that the paper suggests by calculation that the fluctuation of field strength varies with the ratio of height of EUT to the height of the septum. The GTEM is close to the results in a FAR when this ratio is 0.2

Also the ratio of the height of the bottom of the EUT, to the height of the septum, causes additional errors. This should not be less than 0.15 (which conflicts with IEC 61000-4-20 which refers to a minimum ratio of 0.05)

So for each metre of septum height the EUT should be 0.2m tall and at least 0.15m from the floor. Larger EUT which are within 0.05m of the floor indicate fluctuation errors with frequency (up to 1GHz) that rise from 3dB to 5dB.

- IEC61000-4-3 'Other methods'
RM suggested that we write to John Davies (chairman) or Geraldine Salt (secretary) of the GEL 210/11 group at BSI, over concerns regarding the removal referring to other methods and techniques.
- NPL – there is an opportunity to influence which projects will be accepted for the 3 year NMS programme starting in October 2006.

DTI is funding research in cooperation with industry in the next Electrical Programme for 2006-2009. DTI is canvassing suggestions now, and you have an opportunity to influence what research is carried out by completing the screen "Register Interest", opened in the left hand side menu of the webpage

<http://www.npl.co.uk/formulation/electrical/>

- Physical Agents (ElectroMagnetic Fields Annexe)
 - the Directive only covers short term effects
 - Limits are ± 5 for occupational use
 - Only ac fields but ac ripple current on dc supplies is also relevant
 - Everything has to be assessed
 - Military equipment is regarded as civil if there is not as state of war existing

4 Tian Loh from NPL then gave a presentation on the work he has been doing regarding the inter-comparison measurements between FARs, Reverbs and GTEMs using both small and large EUTs. Tian's project represents a great deal of work and the group were presented with a summary of the main findings which generated some useful discussion. The question of whether NPL are going to publish the results was raised by the chairman and perhaps MA should be asked if this was to happen. This would enable further analysis and interpretation by the group.

5 Richard Marshall then gave a presentation on the shortcomings of the typical CDN design based on IEC61000-4-6 Conducted Immunity standard. The presentation was largely based on the article written by RM and also Tim Williams for *EMC & Compliance Journal* and published in March 2005 issue. In particular RM commented on the unbalanced nature of a typical EUT where for example a mains power supply input L/N/E input would typically have the L+N connections across the primary winding of the transformer and the E connection to the metal frame of the product case. So when connecting an M3 CDN we would expect the coupling impedances to remain sensibly constant. However due to the construction and the non-ideal transformer action of the RF choke within the CDN we can see significant losses occurring at certain frequencies on individual connections leading to un-quantifiable errors.

6 The second part of RM's presentation was a demonstration of the impedance measurement of CDN's using a spectrum analyser with a tracking generator and a 'T' attenuator.

7 Information Exchange

- A Fibre Optic RF Link for analogue signals up to 2GHz bandwidth has been announced by EMV. Guide prices £7200 and £2500 for LASER psu. Available in spring 2006
- dB Technology have a new GTEM
- New EMC Directive expected to be published May 2006
- An ANSI Standard specifies the GTEM cell for measuring cable shield effectiveness: ANSI 48-3-2004 Published by the Society of Cable Telecommunications Engineers.
- An IEEE Abstract EMCABS: 01-2-2002 'Correlation of Test Facilities for Radiated Emission Measurements using a spherical dipole radiator: OATS, FAR, and GTEM Cell' Published in Korea. Results show correlation within +/- 4.7dB at 3m and +/- 5.7dB at 10m

- TPS52 UKAS 'Requirements for performance of in-house calibration'. Suggests a relaxation of the uncertainty calculations – but UKAS say will be clarified – use LAB34!
- John Wombwell briefly demonstrated a modified software package for Constant Field and Constant Power Field Uniformity calibration methods in accordance with 61000-4-20

8 AOB

- CISPR 16-2-3 (Generic emissions)
CISPR/H/104/INF paper proposes new emission limits to suit FARs
The proposed difference between OATS & FARS for table top equipment is:
Now OATS 10m 30-230MHz = 30dBuV
230-1000MHz = 37dBuV
Proposed FAR 3m 30-230MHz = 42 decr to 35 dBuV
230-1000MHz = 42dBuV
- The Standards list in OJ 5/10/2005 contains reference to old EMC Directive and will need to be republished before you can use it with the new Directive
- Tim Harrington had sent in [email to most members on 14th Nov 2005] a discussion point: “ the relevance of pp 15-21 in Jan Coenraads [Radiocommunications Agency – The Netherlands] powerpoint presentation of 14 October 2004,
http://europa.eu.int/comm/enterprise/standards_policy/international/world_standards_day/doc/wsd2004_ict.pdf
and if/how this is reflected in [Annexe II of the new] EMC Directive 2004/108/EC?” http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2004/l_390/l_39020041231en00240037.pdf

The meeting briefly viewed pp15-21 and in particular Point 3 in Annex II of the new EMC Directive and had the initial view that they support each other. There is a case for alternative methods.

9 The Chairman thanked Howard Chetwin and Measurement Technology Ltd for hosting the meeting.

10 Next Meeting is to be on Tuesday 28th March 2006 possibly at MTL again.

end