

UK GTEM User Group

Minutes of the meeting held at Measurement Technology Ltd on 21st Sept 2004

1. Present

Roger Dixon (RD)	Aeroflex Ltd [Chairman]
Ian Alderman (IA)	Consultant [Secretary]
John Wombwell (JW)	EMC Hire
Howard Chetwin (HC)	MTL
Angela Nothofer (AN)	NPL
Richard Neyton (RN)	Apollo
Martin Wiles (MW)	Lindgren Rayproof
Mike Kersey (MK)	Nokia
Martin Alexander (MA)	NPL } Part time
Ben Loader (BL)	NPL } “ “

2. Apologies received

Farquhar Galbraith
Joe Wilkinson
Michael Davies
Stuart Bright
Andy Perkins
Neil Coote
Eddie Veater
Harbinder Bharj
Dennis Burns
Alan Hutley
John Birkett
Colin Howes
Stephen Lee
Tim Harrington

3. Chairman opens meeting

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

4. Minutes Of The Last Meeting

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

Matters arising were:-

- The CD from ETS Lindgren mentioned at point 5 in the May minutes is not yet available but is under discussion.
- 'Floormate 500' – NPL have measured the relative permittivity as 1.04 @ 1MHz
HC showed examples of the use of this material at MTL. RD Mentioned the hazards of using Polystyrene because of the risks of bits breaking off and falling into connectors. MW mentioned that 'Roha-cell' is another similar material to Floormate 500 which is also a very good low permittivity material but very expensive.(£2,000 for 8' x 4' slab) NPL have some.
- Joe Wilkinson and Farquahar Galbraith are moving their lab to new premises on a nearby industrial estate from the University of Paisley. They are setting up an independent organisation.
- AN sent copies of –4-20 prior to the meeting and details of the work packages. Very little differences between published edition.

5. Exchange of news and update on previous meeting topics

- Field Probes – No Batteries!
'RadiSense III' Laser powered 10KHz to 4GHz and upto 1000V/m costs £6000. EMC Hire will be having one of these. Also 'Holaday HI-6105' also Laser powered costs approx 7000Euros.
- EMC Hire – JW indicated that he is selling his shares in the company but staying on as a consultant. The company will continue to trade as it does now also David Farrand, the Software Director will continue to offer support as at present. Once you buy the software, the updates are free from the website. EMC Hire have new software available for compiling EMC reports to simplify this task.

6. GTEM User Group Website

Richard Neyton is disappointed in the lack of support from the group. Ie no ideas forthcoming. After discussion various ideas were put forward..

- It was thought that the GTEM Best Practice Guide could be made available from our website, but NPL want to continue to monitor the number of requests for copies of this document. However the website should include a link to NPL so that enquirers can make requests for the document.
- Martin Alexander had suggested their paper on Reverberation Chambers could be available through the website
- Items on the GTEM specifically:-
 - JW has written a page on the GTEM for his catalogue which could be included
 - AN's 300 page thesis 6Mb
- Calling notices and agendas and past minutes can be included also a calendar
- A link to the American GTEM User Group could also be included
- FAQ's
- Ready-reckoner calculators for Correlation perhaps
- Power calculator for amplifier selection for a specific field strength

Members are invited to make any other suggestions for contributions to the web site.

Please contact Richard Neyton with your ideas. richard.neyton@apollo-fire.co.uk

7. NPL New Work Program

Maintenance Plan for IEC61000-4-20 – Angel Nothofer

Work Package 1 – to be sorted by next maintenance meeting in February '05 (on the 15th)

Work Package 2 – is still open at this time up to Feb '05. Five years is the absolute limit for a section of work.

8. Presentation on GTEM Correlation - Mike Kersey

MK gave a brief presentation on some work that he has been doing and showed some graphs comparing semi-anechoic vs GTEM responses for a CNE source up to 1GHz and a York comb generator upto 8GHz. From this work he has arrived at a correction factor which he believes applies to the GTEM.

$$\text{Freq Factor} = 10^{-7} \left| \frac{E_{\theta}}{\text{MHz}} \right|^2 - 0.003 \left| \frac{E_{\theta}}{\text{MHz}} \right|$$

From the discussion which followed those present noted that the GTEM will catch the components which are launched out through the top of the EUT, whereas in the anechoic chamber these are lost.

9. Ben Loader mentioned the DTI's Studio Projects for SME's initiative

This is an award in the region typically £50k that will allow NPL to carry out metrology work for companies in partnership. Government and partner sharing the funding costs.

10. Ansi C63.4 (above 1GHz)

Group review of the draft standard

- The diagrams in –4-20 were felt to be more helpful than that shown at L2 in the Ansi standard
- RD will give some thought to a note regarding decoupling of cables
- L.4.2 Does the GTEM have to be re-validated for each type of product? A better approach should be sought.

11. GTEM Wireless issue

John Wyncott of Motorola posed a question about wireless testing in GTEM's

“Since the advent of IEC61000-4-20 , what do you see as the path for user groups to support wireless acceptance by authorizing bodies, including the FCC?”

An article was put forward by Nokia “Application of GTEM Cells to Wireless Communication Transceiver Designs”

Comment by Farquhar Galbraith..

I feel it is in all our interest to press for acceptance of GTEMs for wireless compliance testing. Acceptance in this area, and the experience gained, could open the door for wider acceptance of the GTEM. I note the "can do" attitude of the USA in contrast to the nit picking over comparisons between test methods prevalent in the UK. I agree with the recent statement by Jan Coenraads of the Netherlands' s radio communication agency following a recent ECACB meeting which I copy below...

The (ECACB) document states: "it is clear that FAR chamber measurements are not directly comparable to those taken on an open area test site. Therefore some adjustment of the limits must be made to demonstrate that the equipment meets the essential requirements of the EMC Directive". In this case the ECACB makes a classical mistake that is often made. It is totally not relevant if one method is comparable to another method (or in other words "if correlation exists or not"). Of course scientists will often argue different as if the OATS is the only valid method that can give adequate radio protection when applied. No, the only relevant criterion is "whether conformity with the essential requirements can be proven when applying the method and the limits chosen by the manufacturer" If it correlates with the OATS or not can never be an argument applied by a Competent Body to indicate if conformity with the Essential Requirements is achieved or not. In my opinion the choice of limits with the method applied, is solely depending on the device and its actual application in real life and not of any correlation with the OATS method and OATS limits that happen to be applied in any harmonised standard.'

12. Presentation by Martin Wiles - IC testing in GTEMs

Martin Wiles gave a presentation on the subject of IC testing in GTEM's. This included high field strengths to observe any damage that might occur in unpowered ic's. This can be achieved using the space above the septum. (Vehicle testing needs field strengths of 200V/m +.)

IEC TC47 are concerned with developing this work.

13. IEC61000-4-3 (3rd edition) Closing date 4th Feb 2005 Review points

- Scope in section 1 - We object to the removal of alternative methods not being able to claim compliance with this standard. Previous editions of this standard have allowed alternative methods that are capable of generating the EM field within the required uniformity limits to be used – hence allowing the GTEM to be used for immunity testing of products, to a variety of Product Specific Standards which reference 61000-4-3.
- On the other hand there is no reference to IEC61000–4-20
- There is no reference to probe linearity – needs informative annex to refer to this

- Amplifier Harmonics reference to –15dBc uncertainties must be less than the probe uncertainty. This needs more explanation/clarity.

14. CISP 16-2-3 1st Amendment review

- 0.75m distance is too big to translate into the GTEM.
- Need ferrites on the cable leaving the penetration plate

15. Next meeting

Proposed for 26th January 2005. Venue TBA)

POST MEETING NOTE – ALTERNATIVE DATE OF WEDNESDAY 2ND MARCH PROPOSED TO SUIT IEC REPORT

16. Close

The Chairman on behalf of the group thanked NPL and Sara Fletcher for their kind hospitality in hosting the meeting. A tour of the NPL RF and Dielectric labs followed at 4pm in conjunction with the EMMA group