

UK GTEM User Group

Minutes of the meeting held at Measurement Technology Ltd on 28th March 2006

Present

Roger Dixon (RD)	Sponsored by Aeroflex Ltd [Chairman]
Ian Alderman (IA)	Consultant [Secretary]
John Wombwell (JW)	EMC Hire
Tian Loh(TL)	NPL
Howard Chetwin (HC)	MTL
Farquhar Galbraith (FG)	The EMC Centre (Paisley) Ltd
Ivan Yallup(IY)	Ampy Automation
Richard Marshall(RM)	Consultant
Tim Hague(TH)	EMV
Angela Nothofer (AN)	Nottingham University

Apologies

Martin Alexander (MA)	NPL
Andy Marvin	York University
Andy Perkins	Schaffner EMC
Eddie Veater	UKAS
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
Sean Saint	MTL
Richard Neyton (RN)	Apollo
Neil Coote	Nokia
Graham Blissett	AWE
Derek Barlow	DB Technology Ltd

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 November meeting had been circulated and were accepted.

3. Tian Loh presentation

TL presented the importance of height scanning with emissions measurements. Using Agilent PSA analyser and YES CGEO1 Comb Generator to a Monocone Antenna. Fundamental signal of 100MHz with 100MHz harmonic spacing. Also the EUT is placed on a turntable with 5deg steps.

Measurements were made in a GTEM 1750 above 1GHz and a comparison with the results obtained in a FAR for both small and large EUT's. The small EUT's agreed within 5dB, whereas the large EUT measured generally 10dB lower in the GTEM than the FAR.

RD suggested looking at the paper of Steve Clay of Nokia which discusses the differences between these measurement methods.

JW mentioned that he had hitherto always believed that the algorithm did not hold above 1GHz, and it was necessary to look for a peak on an azimuth scan.

Results were shown where the GTEM was higher and others where it was lower than the FAR. It was concluded that the directional effect from EUT's has less effect in the GTEM (the graphs supported this) whereas orientation in the FAR has much more effect ($\pm 10\text{dB}$) and this was evident from the graphs. However for accuracy in the GTEM 3 axis correlation isn't enough and the EUT must be rotated.

Cable results

Using a small EUT (0.23 x 0.2 x 0.11m) with an SMA connector + 30cm of un-terminated cable. Also a second cable, from the earth stud on the EUT enclosure, with similar length. We were shown results from the GTEM 3 position correlation algorithm vs FAR max E-Field and here the results were similar but the deviation is either 10 to 15dB greater or lesser than the FAR. The conclusion again is that for measurements above 1GHz must be made as with the LEUT by rotating and scanning in the GTEM.

JW suggested doing three 360 degree scans on an OATS as the yardstick against which the GTEM should be judged.

RD asked if the paper could be circulated to GTEM members. This should be possible, the paper is to be published in the IEEE Transactions on EMC expected to be in November.

4. News items

- CISPR/1/187 is the new draft Multimedia Standard. It references Reverb Chambers but it doesn't mention GTEM's! This standard is going to replace CISPR 13 & 22. At the GEL210 meeting in May. RM will assist with arguing for the inclusion of GTEM techniques in the new standard. [CISPR32 = Emissions]
- JW's presentation on EMC Hire Software was not required as everybody present had it. But he will answer questions on it (whenever required)
- RD made the point that there seemed to be more variation comparing Reverb Chambers to FAR's than when comparing GTEM's to FAR's.

5. Angela Nothofer – the report on the JTF meeting held at York

Minutes not yet approved, but will be made available. FG had been our observer at the meeting and his notes were circulated to the group. FG reported the discussion on the issue of the 'seperateness' of IEC61000-4-3 and 61000-4-20 and pointed out to the committee the serious disadvantage to manufacturers relying on GTEM's if the removal of 'alternative methods' clause from 61000-4-3 went ahead. The meeting had agreed that the two standards should not be seperated but as decisions on this point were made at the Chicago meeting it did not appear possible to change this action.

Inconsistencies in 61000-4-20 regarding field strength calculation. See notes circulated from the York meeting. There was discussion about the number of sample points taken and the statistics on this, also use of the accepted nomenclature for standard deviation (sigma or s). Ref: IEC proposal document on field uniformity - 'Radio Interference Measurements and Statistical Methods – EMC Measurement Instrumentation – CISPR/A TC77-JTF Emissions & Immunity Testing in TEM Waveguides' – Regarding calibration of fields. TEM06xx(Garbe) Jan 2006

JW raised the issue of Constant Forward Power vs Constant Field and advised that one should get the probe calibration carried out at the V/m level that you intend to test at. JW prefers the calibration to constant field strength because of the linearity of the instrumentation.

6. Manufacturers and Notified Bodies

ECACB – European Association of Competant Bodies

- i) The manufacturer need only supply the minimum documentation specific to the product
- ii) The Competant Body cannot specify the laboratory to carryout the tests
- iii) If the resultant tests indicate a PASS then this has to be accepted

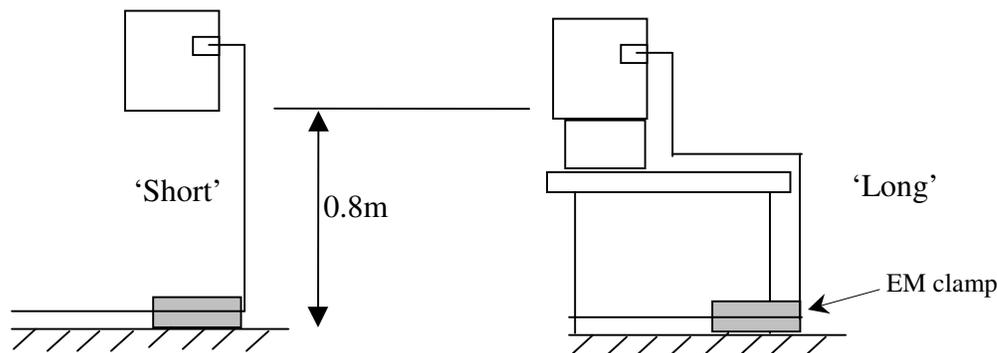
7. Matters arising from previous minutes and other news

- Website - HC offered to liase with AH to get things moving. The 2001 site has been re-installed for people to comment on.
- RadiiSense - Interlock issue discussed
- NPL Work program for next 3 years starts Oct 2006 – Chairman will respond to the request for ideas suggesting that Tian Loh's work be extended.
- New list of standards in the OJ will be reissued, (as it showed the old Directive). The new directive is due out in May.
- CISPR32 Tim Harrington's email was mentioned to the group. [See also Item 4]
- Non-invasiveness of the probe support – JW mentioned his experience with a probe support distorting the field in a chamber and it was discovered that the probe stand had become in-grained with carbon dust from the absorber over time and this dust sticks to Delrin! JW has made a study of plastics for stands which he carried out some 9 years ago. RM suggested putting a sample in a microwave for 2 minutes.

8. Semi Anechoic vs GTEM and Reverb Chamber comparisons

RD gave a short presentation of some results comparing SAC's and GTEM cells for short and long cables. The measurements were <1GHz. Results indicated that the short cable correlation at 3 test sites was within ~5dB. Actually taking the average responses and comparing SAC's and GTEM's for short cables the trend was generally within 3dB! Results for long cables at 3 test sites was within ~10dB, and overall average differences were generally within 5dB.

Some further results comparing the average differences between SAC and RVC for short and long cables for frequencies above 200MHz the correlation was better than 5dB.



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

Next Meeting is to be on Tuesday 11th July 2006 possibly at MTL again.

End.