

Institute of Electrical & Electronics Engineers
Broadcast Technology Society
G-2.1 Audio/Video Techniques Committee
G-2.1.4 Video Distribution Measurements Subcommittee

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1295 E. Algonquin Road
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Monday, August 07, 2000, 8:00 – 11:00 AM

DRAFT MEETING RECORD

Numbers refer to items on the approved meeting agenda.

1. The meeting was called to order at 8:20 AM by the interim chair, Rick Redford.
2. The following were present:
 - Dave Fibush
 - Alan Godber
 - John Grigg
 - Doug Lung
 - Wallace Murray
 - An Nguyen
 - James O'Neil
 - Michel Poulin
 - Rick Redford
3. Mr. Poulin agreed to chair the meeting while Mr. Redford acted as secretary.
4. The draft agenda for the meeting was approved.
5. Draft meeting minutes from Boulder on April 24, 2000 were approved.
6. Mr. Moore was not able to be present, but had left word that he had not been able to locate the Project Authorization Request (PAR) for P205, Draft Standard on Television Measurement of Luminance Signal Levels, which must be included in the final submission to the IEEE Standards Review Committee (RevCom). Mr. Redford said he would contact IEEE to procure a copy. Mr. Poulin will inquire of Mr. Moore the current status. This complete rewrite of the older standard has been balloted, and needs only final approval by IEEE. Mr. Godber will renew the PARs for this and P1521 before the November RevCom meeting, as they both will expire at the end of this year.

7. The new standard P1521, Measurement of Video Jitter and Wander, is ready for balloting. Mr. Godber must attempt to contact David Wood of EBU one last time for comments. Mr. Moore left word that he will follow up on some balloting issues. Mr. Fibush noted that Mr. Moore needs to remind Hans Hoffman of SMPTE committee S-17 to coordinate their specification standards with this new IEEE measurement practice. Mr. Poulin volunteered to follow this up. Mr. Redford will explore voting eligibility, and notify participants of his findings.
8. Mr. Poulin reported that he has received positive replies from SMPTE and EBU favoring the formal withdrawal of IEEE standard 618-1984, Measurement of Luminance Signal-to-Noise Ratio in Video Magnetic Tape Recording Systems. This standard has lapsed, but the procedures are being inappropriately applied to modern digital systems. Mr. Poulin has also contacted the Society of Cable Telecommunications Engineers, Electronic Industries Alliance, Advanced Television Systems Committee, and Association of Radio Industries and Businesses (Japan) for their comments. Mr. Redford suggested that liaison messages include a request to acknowledge receipt, to verify that someone has actually received these communications. In cases of no reply, simply stating that we received no answer does not satisfy the liaison requirements. Mr. Godber will explore exactly what the procedure is to formally withdraw a standard.
9. Mr. Poulin presented a PAR and the copyright release and signature pages for the revision of IEEE Standard 206-1978, Measurement of Differential Gain and Differential Phase. Mr. Redford (Working Group Chair) and Mr. Godber (Sponsor) signed the documents. IEEE Standard 746-1984, Performance Measurements of A/D and D/A Converters for PCM Television Video Circuits, and also International Telecommunications Union Recommendation (ITU-R) BT.1204, Measuring Methods for Digital Video Equipment with Analog Input/Output, both address the measurement of differential gain and phase. There are significant differences between the procedures outlined in these documents. The IEEE Standards are easier to implement, however, the ITU Recommendation calls for using a test signal with dither. Some users may not have the instrumentation to follow this more complicated procedure. Therefore, Mr. Poulin recommends that IEEE Standard 206 be kept as is or updated.

Mr. Poulin will prepare a draft and coordinate it with Mr. Baker. Mr. Lung suggested posting the draft to the G-2.1.4 web site for other comments. In addition to the present Standard 206, Standard 746 and BT.1204 are all on the web site in the private area. Mr. Godber suggested that a note also be posted to describe the relationship between the three present documents, and what is intended. For instance, Standard 746 was written specifically for composite 525-line ITU System M, and would have to be modified for other systems. ITU-R BT.1204 applies to both 525 and 625-line Systems, and the concepts may be used for HDTV. Standard 206 would require somewhat less modification for 625-line and HDTV systems, although for HDTV,

several test signal parameters have yet to be defined, so adding HDTV would add considerably to the work.

10. Mr. Baker was not able to attend this meeting, but has submitted a PAR to revise Standard 511-1979, Video Signal Transmission Measurement of Linear Waveform Distortion. The PAR has been approved by RevCom. Mr. Fibush suggested that the completed PARs for all our work could be posted on the web site for review by participants. Mr. Poulin will send the PAR for this standard to Mr. Lung. Mr. Redford suggested that the signature page does not need to be included, and that these could be put on the public area of the web site, rather than the private area. Mr. Poulin asked if some figures from published Tektronix brochures could be used in lieu of the rather poor copies from the existing printed standard. Mr. Fibush said he thought such figures were so common that there would be no problem. Mr. Poulin will send to Mr. Lung an electronic copy of the document, as there is no editable version on the web site at present. Mr. Redford said he thought he might have an actual published edition of this standard, the figures and formulas of which would be good enough for scanning. Mr. Poulin suggested that it be published in MS Word 7 (to minimize the file size of figures), and that everyone may have MS Word 2000.

Mr. Redford then read submitted written comments (which have been on the web site for some time) concerning a recommendation for the phase of the Modulated 12.5 T pulse test signal, which is used for some measurements in this Standard. Mr. Bruce Lilly (a previous member of the parent G-2.1 Committee) had suggested that a more useful phase might be found for analysis of component signals derived from composite, or vice-versa. Mr. Brad Medford, Senior Member of the Technical Staff, SBC Technology Resources, Austin, TX., agreed that changing the recommended phase for the 12.5 Modulated T pulse would be a good idea if it benefited analysis. However, he cautioned that some of the embedded base of test equipment like the VM-700 might expect to see the de facto phase of 60.84 degrees.

Dan Baker (a member of this Subcommittee) wrote that the magenta phase is the most common for modern component/composite test signal generators. If B-Y to R-Y gain and delay skew occur, then zero and ninety degrees makes sense to isolate the worst component of the chroma that is causing the composite signal to indicate a gain and/or delay error relative to luminance. He noted that both R-Y and B-Y are scaled values, so neither would equal the chroma gain error. There might be some phase which would better correlate, but it would not be a standard color bars phase or amplitude.

Warner Johnston of ABC wrote that the classic use of the phase of the 12.5 or 20T pulse in NTC-7 [probably an earlier version, i.e. NTC-1?] was to identify which of the original three TV networks sourced the video. ABC was blue, NBC was red, and CBS was green. It was also possible to free-run the phase. Mr. Redford noted that NTC-7 [the last version] does not address the phase for the modulated 12.5 T pulse, and that various manufacturers use other, sometimes split-field phases, including burst phase, R-Y, B-Y, and, of course the "rainbow " Mr. Redford recommended that we

open a discussion on the E-mail reflector, and ask test equipment manufacturers to comment.

11. For the revision of Standard 746-1984, Performance Measurements of A/D and D/A Converters for PCM Television Video Circuits, Mr. Poulin has drafted a PAR which says it applies to 525-line systems only. Mr. Redford asked if the standard could not also apply to 625-line systems, since this would standardize the measurements, and IEEE standards are supposed to be worldwide in scope, if possible. If it is decided that the scope should include other systems, or HDTV, the PAR should be changed before submission. Mr. Fibush noted that certain differences in measurement methods are well entrenched between 525 and 625-line standards, and there may not be sufficient user demand to justify this work by the Subcommittee for either standard. Mr. Poulin remarked that A/D and D/A converters are widely used in many video applications, and speaking as a manufacturer, having the standard would result in better products. After much discussion, it was decided to proceed with the revision of this standard for 525-line System M as the PAR has been drafted, and delay inclusion of 625-line or HDTV until the extent of need can be determined.

Mr. Poulin would like to add specifications for DC level compensation and input stage APL stability. He asked if there exists a tighter standard for the DC tolerance of blanking level, recalling some component document which specifies plus or minus one volt, a huge variation when dealing with A/D and D/A conversion. A test for the input stage should be added if this is typical practice, since SMPTE Recommendation 170M does not specify DC offset. Mr. Murray remarked that for over-the-air transmission, the tolerance is tighter than for transporting the signal as baseband. Mr. Redford noted that NTC-7 and EIA Std. RS-250C speak of “non-useful DC component.” Mr. Murray said encoding and scrambling can significantly alter the DC offset, and then produced a pocket generator which he said has about two volts of DC offset. Mr. Poulin asked that the Subcommittee participants check for any specifications which might apply for baseband signals. Mr. Redford suggested that if no reasonable tolerance exists, the appropriate organization should be asked to set one (Mr. Fibush suggested SMPTE Committee I23).

12. Mr. Poulin has scanned Proposed IEEE Standard P948, Measurement of Chrominance Signal-to-Noise Ratio in Video Magnetic Tape Recording Systems. This document was drafted, but the approval process was never completed, between 1979 and 1986 by the G-2.1.5 Video Recording Measurements Subcommittee, which is no longer active. The G-2.1.4 Subcommittee has agreed to carry the project through the approval stage because the existing completed draft has become the worldwide de facto standard for these measurements, yet it is impossible to obtain anything but “bootleg” copies of the draft. The expertise from this work should be available to the industry for both current evaluations and future research.

Some minor typographical errors were explained in the current version, which will be revised and the corrected version will be reposted on the web site. Mr. Poulin will

then send the document to several test equipment manufacturers who had participated in this work for their review (Asaca/ShibaSoku, Rhode & Schwarz, and Tektronix in particular). Mr. Redford mentioned that Victor Kong, now of Magni Systems also participated in this work. Mr. Godber will check whether the PAR for this project is still active.

13. A draft outline and PAR will be prepared for the next meeting by Mr. Poulin for a new standard for swept frequency measurement.
14. Mr. Baker sent a message that Digital Video Broadcasting Project (DVB) ETR 290, which details measurement techniques and tolerances for DVB/MPEG transport streams in satellite, cable and terrestrial transmission systems, has been completed, and that he will share with the Subcommittee the May draft, which has a large annex explaining the meaning and importance of filtering jitter/wander with a specified demarcation frequency. This document will be posted in the private section of the web site for review. At the last meeting, Mr. Baker was asked to demonstrate a simulation example of how the measurement is performed, in anticipation of a new IEEE standard for an MPEG-2 PCR Jitter measurement procedure.
15. There was no new discussion on the status of electronic communication used by the Subcommittee (E-mail reflector, web site issues). Mr. Fibush asked if the meeting notices could be posted earlier.
16. There was no new business.
17. The next meeting was set for 30 October, tentatively in Miami [Note that the venue was changed to San Antonio]. Mr. Redford thanked Mr. Grigg for his continuing efforts to provide meeting space and accommodations through Committee T1A1 of the ATIS. The meeting was adjourned at 11:10 AM.

Immediately following, Mr. Redford described to both G-2.1.4 and the G-2.1.6 Video Compression Measurement Subcommittee (whose meetings customarily follow those of G-2.1.4) some changes which have recently taken effect within the IEEE concerning indemnification for standards body participants, and eligibility to vote in standards ballots. The IEEE Standards Association (SA) has been established to handle all standards activities. A message describing these changes was sent to participants via the two E-mail reflectors.

The issues involve a new requirement that all voting members be members of the SA, and the additional fee required to join. Mr. Redford explained that IEEE members are charged a nominal additional fee, but non-IEEE members are charged an amount approximately equal to the cost of joining the IEEE and the SA. Previously, non-IEEE "experts" could be invited to join standards-making bodies within the IEEE as voting members. Now, those individuals may not choose to pay the additional cost, thereby reducing the expertise

of the group. Not having voting privileges, those individuals might choose not participate at all.

Mr. Fibush remarked that in his 30-odd years in standards work, he has never heard of anyone being sued. Mr. Godber recalled some lawsuit brought against one of the standards bodies several years ago. Mr. Johnson from ABC sent a communication saying that he is presently involved in the appeal of a standard for which he was editor, and it has involved the company's general counsel, so he thinks the added nominal cost for those who are already IEEE members is reasonable. Mr. Lilly wrote that he thought the added fees were abusive. Mr. Grigg felt that the changes were quite reasonable, considering the costs expended in attending the meetings. Mr. Murray remarked that there are many other organizations which write standards, and the IEEE may discourage participation. Mr. Watson (who joined the discussion via telephone) from NASA thought that the added fees seem a bit odd, although it is a small amount of money for IEEE members. There were good reasons recognized on both sides; no clear consensus formed on the fees issue; most thought indemnification might be useful.