PROPOSED

SMPTE ENGINEERING GUIDELINE

EG 12

Control of Basic Parameters in the Manufacture of SMPTE Photographic and Magnetic Audio Test Films

1. *Scope*

This guideline specifies and describes the basic control parameters to be followed in the production of SMPTE-distributed audio test films.

2. *Intended Use of the Test Films*

2.1 For the purpose of this guideline, photographic and magnetic audio test films, as specified in their parent documents, can be classified according to their use, as follows:

2.1.1 Operational. The films are intended as tools for checking the normal and correct operation of a piece of equipment.

2.1.2 Objective. The films are intended to be used as system-alignment tools for quantitative measurements and/or numerical (statistical) evaluation of deviations from established standard values of measurable equipment parameters.

2.1.3 Subjective. The products will be used for quick, overall evaluation, or comparison of the qualitative characteristics of equipment.

3. *Classes of Inspection*

3.1 Application of Classes of Inspection: The SMPTE Engineering Department will determine the required class of inspection for *each item specified* in each test film document to ensure that all the products supplied by SMPTE meet an AQL level so that substantially all the products meet the primary characteristics called for by the parent document.

3.2 Class 1: Calibrated.

3.3 Class 2: Each item to be 100 percent inspected.

3.4 Class 3: One unit of each 10 in a production run to be inspected.

3.5 Class 4: Two units of each production run to be inspected.

4. *Final Product*

4.1 All test films shall be made in accordance with specifications given in their parent document.

4.2 All test films shall be on splice-free stock unless the specifications state otherwise.

4.3 The base film stock shall be in accordance with the specifications given in the parent document.

5. *Dimensional Stability*

5.1 For test films to be magnetically recorded, the physical parameters of the film stock shall be stabilized before coating with magnetic oxide. This is usually accomplished by exposure to a constant temperature and humidity environment for a period of time prior to coating. Following coating, a similar amount of time is allowed for the coating to dry under the same environmental conditions prior to recording.

5.2 Typical pre-conditioning before coating consists of maintaining the film for 10 days at a temperature of 20°C ± 3°C (68°F ± 5.4°F) and at a relative humidity of 50% ± 10%. After coating, the environmental conditions for drying are the same as those for pre-conditioning.

5.3 For test films to be photographically recorded, the physical parameters of the film stock shall be stabilized before recording. This is usually accomplished by exposure to a constant temperature and humidity environment for a period of time prior to recording.

5.4 Typical pre-conditioning of film before photographic recording consists of maintaining the film for 10 days at a temperature of 20°C ± 3°C (68°F ± 5.4°F) and at a relative humidity of 50% ± 10%. This requirement is usually met by keeping the film in its original sealed packaging at the specified temperature.

6. *Sequence*

The test sections and segments shall be recorded on the film in such a manner that they replay from head to tail in the order corresponding to the sections and sub-sections of the parent document.

7. *Polarity of Recordings*

7.1 Consistency of Recorded Polarity Across the Width of Magnetic Test Films. The recorded magnetic flux across the film width shall have identical polarity in all the records. In the case of full-coated film, this can be ensured by having one continuous gap at least the full width of the film; in the case of stripe-coated film or full-coated film recorded with separate records across the width, this can be ensured by the method noted in the appendix.

7.2 Consistency of Recorded Polarity Across the Width of Photographic Test Films. The recorded area, density, or other means of recording photographically shall have identical polarity in all the records, unless otherwise noted in the parent document.

7.3 The absolute polarity of recorded test signals for test films need not be controlled since the test signals are sinusoids or noise having no polarity-reversal consequences. Specialized test films or film segments intended to standardize absolute polarity shall be recorded with the polarity shown in the parent document.

8. *Environmental Conditions, Winding, Packaging, and Instructions*

8.1 Environmental Conditions of Recording. The films shall be recorded and packaged within the temperature and humidity limits specified in 5.2.

8.2 Winding and Packaging.

8.2.1 70- and 35-mm materials shall be placed on cores of at least 3-in (75-mm) diameter (to minimize core-set) with the tail end out and wound emulsion side in.

8.2.2 16- and 8-mm materials shall be placed on appropriate reels with the head end out and wound emulsion side in. The reel hub should be at least 3 in (75 mm) in diameter to minimize core-set.

8.2.3 All materials shall be wrapped in chemically-neutral plastic bags and sealed in metal cans with self-adhesive tape designed to provide a moisture and vapor barrier.

9. *Identification*

Each test film and can shall be suitably identified to show the contents, serial number, and date of manufacture. The film shall be identified on the head and tail leaders, and the can shall be labeled.

Appendix

(The Appendix is not a part of this SMPTE Engineering Guideline, but is included for information only.)

A constant polarity relationship of the recorded flux, as recorded by a multiple-track recording head, can be ensured if the individual coils of the recording head are similar and are assembled in the same manner. The relationship is accomplished by connecting the winding in series so that the end of each coil is connected to the beginning of the next coil, thus maintaining a consistent direction of winding. This relationship can also be accomplished with a parallel-type connection if the corresponding beginning leads are connected together and the corresponding ending leads are connected together and the direction of each winding is kept consistent with other coils.