TERMS OF REFERENCE FOR THE R&D PROJECT
(LITD 07 "Audio, Video and Multimedia Systems and Equipment, Sectional Committee")

1. **Title of the Project**: Study for determination of optimal operating life of Television Sets (TVs) and collection of data related to Manufacturing of Televisions

Duration: 4 Months

2. **Background:**

a) LITD 07 "Audio, Video and Multimedia Systems and Equipment, Sectional Committee" is the committee for development of Indian Standards including safety requirements relating to:
   i) Audio, video and multimedia systems and equipment
   ii) Acoustics, electroacoustics and related instruments

b) IS 18112 'Digital Television Receiver (DTV) for Satellite Broadcast Transmission - Specification' and IS 16337 'Integrated digital terrestrial, satellite, cable television (IDTV) - Specification' are the Indian standards for Television. IS 4547 'Receivers for monochrome television broadcast transmissions - Specification' was the standard for monochrome television. IS 16337 specifies requirements for the reception of digital terrestrial and optionally satellite and/or cable television signals. IS 18112 specifies requirements for the reception of digital satellite Free-To-Air (FTA) TV and Radio signals.

c) Centre Pollution Control Board (CPCB) had issued rules and guidelines regarding e-waste and as per these rules/guidelines average life of Television sets (TV) is 9 years. IS 18112 and IS 16337 have requirement of 'OPERATING LIFE TEST'' however, no specific life/average life has been mentioned for TV in these standards.

d) There are electrical/electronic products like Lamps, LED lamps etc. for which existing standards specify the life, rated life etc. along with test methods for such requirements however, at present such requirement is not specified for TVs. It will be in the consumer interest to explore feasibility of specifying optimal life of TV.

e) R &D Project is proposed to explore feasibility of specifying optimal life of TV {including all kinds based on resolution, display like SD,4K,8K, LED, OLED, QLED and tuners such as QAM and QPSK} and associated test method for this requirement.

f) Based on the outcome of study, existing standard(s) for TV may be considered for revision.

3. Objective: To explore feasibility of specifying optimal life of TV {including all kinds based on resolution, display like SD,4K,8K, LED, OLED, QLED and tuners such as QAM and QPSK} and associated test method for this requirement.

4. Scope:

a) Study and explore the feasibility of specifying the optimal life of a Television set (TV) [including all kinds based on resolution and display like SD,4K,8K, LED, OLED, QLED and tuners such as QAM and QPSK] in terms of hours of operation or years as may come out based on the study.

b) Identify the major components/ subassemblies of TV which can effect the life of a Television set (TV). Components/ subassemblies can be Display (like LED, OLED,QLED), resolution (like SD,4K,8K), Software(s), Power supply unit, Mother board panel.

c) Recommend the optimal life of TVs as well as to standardize parameters and test method to validate optimal life of TV.

d) Collection and reporting of data related to TV manufacturing:

i. Raw materials/Components used
ii. Countries from where raw materials/components are being sourced and percentage thereof
iii. Manufacturing methodology used and process control
iv. Varieties manufactured
v. Test-facilities available
vi. Test methods used
vii. Frequency of testing of each parameter
viii. Sampling data for testing
ix. data sheet/ technical specification of each variety of product manufactured
x. Steps taken for ensuring energy conservation/ efficiency
xi. Sustainable processes followed in the production process

5. Deliverables:

a) Study report covering all the aspects mentioned in the scope, including following:

i. Compilation, comparative analysis and summary of requirements mentioned in various documents, standards, research papers;
ii. Response to questionnaires of discussions;

a) Quantification of the optimal life of Television set in terms of hours of operation or years as may come out based on the study as well standardized test method to validate optimal life of TV.

6. Research Methodology:

a) Literature survey:

i. research papers, existing studies carried out in this area
ii. standards developed, referred by other countries
iii. practices, test methods used by TV manufacturers

iv. IS 15111 series ‘Self ballasted lamps for general lighting services’, IS 16102 series ‘Self - Ballasted led lamps for general lighting services’ and standards for other electrical/electronic products.

b) Discussions with TV manufacturer (at least five), testing labs (at least five) and collect feedback, information through structured questionnaires.
c) Testing of samples.
d) Visits to the relevant Institutes/Industries.

7. Requirement for the CVs:

The individuals, organizations engaged in this project should have working knowledge, experience related to the development, maintenance, testing of Television Sets.

8. Timeline and Method of Progress Review:

Timeline starts from the day of award of R&D project

Project Initiation (Month 1): The project officially begins with a detailed review of existing literature in this area.

Data Collection and Mid Term review (Month 2): Discussion with Testing Labs, Manufacturers and Testing of samples. Draft report is submitted for mid-term review by end of 2nd month to assess progress and adjust methodologies as necessary.

Report Submission (Month 4): Final project report is submitted.

9. Support BIS will Provide:

BIS will offer guidance and access to existing relevant Indian and ISO/IEC standards, details of BIS licensees, BIS recognized labs. Additionally, BIS may facilitate exchange with TV manufacturers.

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