A comprehensive quality assurance phantom has been developed under the auspices of the NEMA-SCA&I Joint Work Group. The QA Phantom is based on two principles that can be distinguished from the phantoms designed in the past. They are: (1) reproduction of the clinical conditions in terms of patient simulation as well as the ”operation and function” of the imaging system, and (2) the testing procedure is geared for a “system level” testing rather than a “component level” testing.

In order to accomplish the first objective, for example, the PMMA Plastic such as Plexiglas™, Lucite™, and Acrylic™ was selected as the phantom material, and the traditional materials such as aluminum, and copper were not employed. This ensures the radiation entering the image intensifier is a close simulation of the real clinical conditions as faithfully as possible in both *the radiation quantity, and quality.*

The physical imaging parameters included for measurements using this QA Phantom are: (a) the high contrast spatial resolution, (b) the low contrast discernability, (c) over all dynamic range, and (d) motion/lag detectability. In addition, the patient entrance exposure (exposure rate) will be measured as one of the indices of system performance in place of the image intensifier input exposure rate (IIIER) which is a component level test measurement.

The presentation of this paper will bring the attentions of the society members to the most up-to-date status of the Joint Work Group while focusing on the QA Phantom in detail and describe the rational and physics behind its design principles**.**