

## ANNEX (See Art. VI).

**TECHNICAL STANDARDS IN CONNECTION WITH THE SUPPRESSION OF INTERFERENCE CAUSED BY ELECTRICAL APPARATUS**

1. Diathermy apparatus, induction field heaters, carrier call systems, and similar non-radio apparatus which uses radio frequency currents as an essential to their operation, may be a serious source of interference to radio-communications.

2. The use of such apparatus has an important place in therapeutics, surgery, industry, etc.

3. The radiation of radio energy is not essential to the proper functioning of the apparatus and can be prevented or controlled without impairing the usefulness of the apparatus for its intended purpose.

4. The radiation takes place generally from the output circuit, internal circuits or power supply connection, all of which are essential elements.

5. The extent of the radiation depends upon the operating frequency or frequencies, power, and the design, installation and operating of the apparatus.

6. The radiation through the power supply connection can be prevented by means of a shielded transformer or a line filter. Radiation from the internal circuits can be prevented by means of suitable metallic cases. The radiation from the output circuits can be reduced to a level so as not to cause interference to radio communications by means of suitable metallic shielding, if the shielding encloses the entire apparatus and is of sufficient dimensions that large eddy currents are not produced in the shield. Aluminium foil paper and well-bonded copper screening have been successfully employed for shielding of rooms enclosing diathermy apparatus.

7. The frequencies used for such apparatus may be any frequency in the useful radio spectrum. However, many diathermy units (which cause most long-distance radio interference) operate in frequencies from approximately 10000 to 25000 kilocycles. Operations on other frequencies mainly cause interference to local or moderate distance reception.

8. The usual diathermy machine is essentially a radio transmitter of the self-excited oscillating type and generally uses self-rectifying plate power supply. Due to the inherent instability of the oscillator circuits, and the different uses to which the output circuit is subject, the operating frequency will vary during normal operation over very wide bands, provided automatic frequency control equipment is not incorporated.

9. All diathermy machines designed for the same service can operate on the same frequency without impairing their usefulness, since their operation is not affected by radiation from other machines. Operation on a specific frequency with a very close frequency tolerance is practicable, with little added cost. It is understood that the present design of diathermy equipment has to a great extent gravitated to frequencies above approximately 12 megacycles, hence it is recommended that the subscribing countries consider requiring all diathermy machines to use not more than two frequencies in harmonic relation above 12 megacycles which will not interfere with existing radio assignments. The harmonic relationship between the two frequencies provides a further guarantee against interference to radio-communication.