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CIVIL AERONAUTICS MANUAL 16

U. S. Department of Commerce — Civil Aeronautics Administration

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Supplement No. 1 — January 5, 1952

SUBJECT: 16.51 Modification

The purpose of this supplement is to make available the current interpretations which apply when substituting equivalent component parts in type certificated radio equipment.

16.51-1 Specifications
16.51-2 Changes Requiring Approval by the Administrator

The attached page should be retained in a series of similar statements which will be issued explaining or implementing Civil Air Regulations 16. CAM 16.51-1 and 16.51-2 appeared in the Federal Register on January 5, 1952.

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Attachment

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40B, 40E, 40F-1

16.51 *Modification.* No change shall be made in the approved specifications under which type certificated aircraft radio equipment is manufactured prior to the approval of such change by the Administrator.

16.51-1 *Specifications. (CAA interpretations which apply to 16.51)*

The word "specifications" as used in 16.51 is considered to mean drawings, drawing lists, and parts lists which define the electrical and mechanical characteristics of all components used in the prototype equipment to which a particular type certificate was issued including subsequent approved modifications to such equipment. These specifications include values of resistance, capacitance, inductance, voltage or current ratings, stability, and other factors which, if varied, might result in changed performance or reliability.

16.51-2 *Changes Requiring Approval by the Administrator. (CAA interpretations which apply to 16.51)*

(a) At the time Part 16 was promulgated, manufacturers of radio components were far less in number and the variety of components produced was less than we now have. Therefore, a component made by a specific manufacturer was, in many instances, the only one of its type available. Any change to another manufacturer's component meant a change from the original specifications. To a certain extent this is still applicable on many components of a special nature such as discriminators, 90 or 150 cycle filters, bridge rectifiers, certain mechanical components, and other items peculiar to a particular equipment or manufacturer. *Such items can be changed only with the prior approval of the Administrator.*

(b) Other components which can be replaced without changing the approved specifications, regardless of manufacturer, do not require the prior approval of the Administrator. Tubes, resistors, capacitors, chokes, tube sockets, relays, standard hardware and related components, generally fall within this category.

(c) In determining the category within which a change falls, sound judgement should be exercised by the user, and if in doubt, the question should be referred to appropriate authority. Particular caution should be observed in replacing components in VHF, ILS, VOR, and any other equipment having critical circuitry. For example, in most low, medium, or high frequency equipment, the size or physical shape of parts is often of no particular consequence, provided other pertinent characteristics remain unchanged. However, in the VHF and UHF spectrum or higher, the size or shape of components, such as a resistor, may materially affect performance, particularly in critical RF circuits. Similar examples can be quoted for other components, such as IF transformers having special selectivity characteristics. In such circuits, replacements should be physically and electrically identical; otherwise, changes should be considered as a modification, and appropriate approval obtained.

(d) In selecting replacement components which are to be used in a circuit, consideration should also be given to the reliability factor of the component selected. Normally this should cause little or no trouble. However, components procured from a new or untried source should be investigated to determine that equivalent reliability can be expected.

(e) In general, if a component can be replaced with one having the same characteristics as required by the approved specifications, prior CAA approval is not necessary. If available replacements do not possess all essential characteristics or if its specifications cannot be determined accurately, prior CAA approval should be obtained.