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September 27, 1993

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SEP 27 1993

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Re: Rule Making No. 7610

Dear Mr. Caton:

Transmitted herewith on behalf of the Association of Federal Communications Consulting Engineers are an original and four copies of that association's comments in Rule Making No. 7610

Should any questions arise concerning this matter, please communicate with the undersigned.

Very truly yours,

FLETCHER, HEALD & HILDRETH



Edward W. Hummers, Jr.
Counsel for Association of Federal
Communications Consulting Engineers

EWH/bi
Enclosure
cc: Robert D. Culver, P.E. (w/enc)

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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

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PR Docket No. 93-199

SEP 27 1993

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the matter of

Amendment of Part 87 of the)
Commission's Rules to implement)
technical requirements)
applicable to instrument)
landing system receivers and)
VHF Omnirange Radio receivers)
adopted by the International)
Civil Aviation Organization)

RM-7610

Comments

of the

Association of Federal Communications Consulting Engineers

1. The Association of Federal Communications Consulting Engineers (AFCEE), which includes approximately 80 members who are registered professional engineers in the full-time practice of communications consulting engineering or engineering executives of multiple station operations, and an approximately equal number of associate members, most of whom are engineers employed by manufacturers of broadcast equipment, hereby submits its comments in the above captioned matter.

2. AFCCE has been active in various proceedings and forums dealing with the potential for interference to aeronautical services from VHF FM broadcast facilities through its Aeronautical Committee. AFCCE has previously expressed its concern regarding the lack of adequate standards for aeronautical receivers used for communication and navigation purposes. This lack of standards,

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particularly in the equipment used by the general aviation segment, which comprises over 90% of the active civil aircraft fleet, has led to the adoption of interference prediction criteria by the Federal Aviation Administration based on empirical data garnered from measurements made on actual production receiver equipment rather than a scientifically based standard. In some cases, the protection criteria have been based on the worst case receiver performance. The FAA's Airspace Analysis Model (AAM-1) is based on such empirical data.

3. AFCCE agrees in principle with the Commission's proposal in the instant rule making proceeding since the ICAO standard is a good first step in the process of adopting meaningful standards. Its adoption will eliminate many of the problems now experienced by broadcast applicants when the FAA applies its AAM-1 to the proposals. AFCCE would prefer a shorter timetable for the implementation than that proposed by the Commission particularly when it is recognized that satisfying the ICAO criteria may not require the replacement of the affected receivers.

4. The ICAO required immunity characteristics may be achieved by appropriate pre-selection in the receiver front-end. In other words, if the receiving system provides adequate rejection of strong undesired signals (FM broadcast signals, in this case) the ICAO immunity standards can be met. In most cases, the system performance requirements can be met by appropriate integral (internal) receiver bandpass filters alternatively, however, filters external to the receivers can also achieve the desired

system performance results. (It is recognized that some receivers may have poorly designed input stages which are prone to "overloading" and non-linear operation at relatively low input levels which pre-selection alone may not correct.)

5. AFCCE suggests, therefore, that equipment approvals for ICAO compliance be broadened in scope to include the use of inline/outboard filters in the aircraft receiver antenna system. A relatively inexpensive filter -- easily installed in most GA aircraft -- could achieve the desired results without requiring the wholesale replacement of a large number of existing VHF aircraft receivers. (According to the National Business Aircraft Association, only two receiver models are presently available that meet the ICAO standards.) Furthermore, AFCCE recommends that the timetable be reconsidered in light of this method of compliance. Alternatively, the external filter could be considered as an interim "fix", which could be implemented within much shorter timeframe, while requiring the integral filter solution at a later time (e.g., the timetable as proposed).

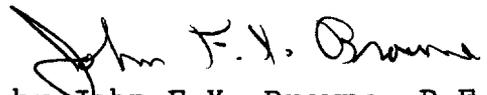
6. There is another factor influencing the advisability of a timetable which requires action 12 years hence, namely, the advent of the Global Positioning System (GPS)-based navigation. The FAA appears to be in a fast-track mode to adopt GPS-based navigational technology. GPS systems meeting TSO C-129 are now approved for enroute and terminal navigation as a supplement to VOR based systems by year's end, approval is likely for GPS as a sole means of navigation in these environments and also for non-precision

instrument approaches. Certification for use in Category I ILS approaches using some form of differential GPS (DGPS) is around the corner. This will cover virtually 100% of light general aviation operations which comprise the vast majority of all civil aircraft operations; Category II and Category III ILS operations are, as a practical matter, now limited to air carrier and heavy corporate jet aircraft operations (by virtue of air crew and equipment certification requirements). Many industry prophets are predicting that VOR-based navigation will have gone the way of low frequency ranges by the year 2000; while the future of VHF-based ILS systems for Category II and III approaches is not certain, there is significant support for use of DGPS for these categories of instrument approaches as well. Thus, the need for any VHF-based navigation system (VOR or ILS) beyond 2000 is questionable at best.

7. Therefore, AFCCE recommends that the Commission consider a foreshortened time-frame from the one proposed, that it also consider the impact of GPS in setting these timetables, and that it permit a systems approach to meeting the ICAO standard (which would permit the use of external filters).

Respectfully submitted,

ASSOCIATION OF FEDERAL COMMUNICATIONS
CONSULTING ENGINEERS



by John F.X. Browne, P.E.
Chairman, Aeronautical Committee

September 27, 1993