

**Before the
Federal Communications Commission
Washington, D.C.**

In the Matter of)	
)	RM No. 11779
Amendment of Part 73 to permit Permanent Licensing)	
of AM Synchronous Booster Stations)	

Comments of Cavell, Mertz & Associates, Inc.

The consulting firm of Cavell, Mertz & Associates, Inc. (“Cavell Mertz”) submits these comments in support of the Petition for Rulemaking (“Petition”) filed by Wilfredo G. Blanco-Pi (“Petitioner”) in RM-11779 (November 21, 2016) wherein it is proposed that the Federal Communications Commission (“FCC” or “Commission”) amend its rules and regulations to routinely authorize AM Synchronous Booster stations and create any necessary rules to support this service¹.

AM is the only broadcast service that does not routinely permit the use of in-band booster stations; Cavell Mertz believes that it is now appropriate to reverse this limitation and to allow the regular licensed use of AM Band Booster Stations on a secondary basis in much the same manner as it is permitted in the FM and Television Broadcast bands. Cavell Mertz firmly believes that the use of on-frequency boosters for the AM service has been technically feasible as has been demonstrated by experimental authorizations over the many years, and is even more feasible today with the advent of new technological advancements in the areas of frequency stability, carrier locking, precision signal delay/timing, and inter-facility telemetry communication.

Cavell Mertz also believes that using AM band frequencies to creatively address AM band issues will further the Commission’s stated goal of encouraging AM Band “revitalization” and the development of transmission and reception technology improvements.

Petition Summary and Supporting Comments

For purposes of clarity, our understanding of the proposals contained in the Petition is offered below:

¹ Cavell Mertz submitted comments in this regard in the “AM Revitalization” proceeding MB Docket No. 13-249.

- a. The Petitioner has proposed to allow AM “synchronous boosters” within a host (primary) station’s 2 mV/m contour, thus providing a “fill-in” service.
- b. The Petitioner has proposed allowing extension of coverage beyond a parent station’s conventionally predicted 2 mV/m contour, provided that there is some measure of overlap between the primary station’s and the booster station’s 2 mV/m contour.
- c. The Petitioner has proposed that synchronous booster stations protect other stations from interference from a booster facility in the same manner as the primary station does.
- d. The Petitioner has proposed to allow booster station to operate either directionally or non-directionally, with powers that are greater or less than the associated primary station.
- e. The Petitioner has proposed a carrier frequency tolerance of plus or minus 0.2 Hertz.
- f. Finally, the Petitioner has proposed that an AM Booster Station’s programming be a rebroadcast of the primary station’s programming (allowing no program origination) and that consideration be given to proper program timing between the facilities.

Cavell Metz essentially supports these proposals and respectfully offers the following comments:

With respect to items “a” and “b” above, Cavell Mertz believes that the purpose of an AM station Synchronous Booster would be not unlike that which is presently permitted in various forms in the FM Broadcast² and Television Broadcast³ services – a means for a primary station to overcome deficiencies⁴ occurring within the licensed/intended coverage footprint and not a means for extending coverage beyond the authorized coverage area. To that end, Cavell Mertz would favor a similar approach to that employed with the recent FM translator for AM stations filing windows - specifically, we would propose limiting the 2 mV/m coverage of the Synchronous Booster to the boundary of the primary station’s 2 mV/m contour, or within a twenty five mile radius from the primary station’s transmitting site. We would support an extension beyond the primary station’s 2 mV/m contour, provided that there is overlap between the primary station’s 2 mV/m contour and that created by the Synchronous Booster, but in no instance should the Synchronous Booster station’s 0.5 mV/m contour extend beyond the primary station’s predicted daytime 0.5 mV/m contour.

² See FCC Rules and Regulations, Subpart L. See also FCC Rule Section 74.1201 and 74.1233

³ See FCC Rules and Regulations, Subpart G. See also FCC Rule Sections 74.701 and 74.733(i). Further, single frequency synchronous networks (“DTS” or “Distributed Transmission Systems”) are in operation in the television band and have been permitted in the television band per FCC Rule Section 73.626 and 73.6023.

⁴ For AM stations, deficiencies can be created (and have been demonstrated elsewhere) as being caused by increases in the “noise floor” in the AM band, and localized impediments to propagation often caused by industrial area buildup.

If the Commission decides that coverage extension within a primary station's "pattern null" areas would be in the Public Interest, Cavell Mertz believes that it is essential that the Synchronous Booster to adhere to the same interference/contour overlap rules that the Primary Station must follow (Petitioner's Proposal "c" above). However, we feel that the Synchronous Booster should be categorized as a "secondary facility" and in no instance should objectionable interference to other stations be permitted. Interference to and from a Booster station's Primary station is to be expected, but we would suggest that mutual interference not be normally permitted within a Primary station's principal community. (We note that the FCC's own existing rules, Section 73.182(t), discuss Synchronous Booster stations and the matter of determining coverage and the impact of mutual interference between a primary station and a booster station.)

With regard to International coordination and interference considerations, the use of AM band synchronized networks have already been contemplated in existing international agreements⁵ for this hemisphere, therefore there should be no impediment in adopting rules in this regard with respect to neighboring countries.

Regarding the Petitioner's Proposal on directional versus non-directional operation, Cavell Mertz believes that there should be no restriction on the choice of antenna system for a Synchronous Booster station as long as no new interference or contour overlap is caused to other stations. Directional or non-directional antenna systems should be permitted, as should antennas of lower than customary height. (Antenna efficiency should be one of local coverage concern – Synchronous Boosters should not be held to the Commission's efficiency rules.) However, Cavell Mertz believed that a Synchronous Booster's power be routinely limited to no more than that permitted for the primary station.

Regarding operational tolerances, Cavell Mertz notes that the Canadian Agreement recommends that the difference in carrier frequency between any two stations in a Synchronous AM system not exceed 0.1 Hz. While the Petitioner has suggested a tolerance of 0.2 Hz, it is reasonable to require a stricter tolerance given the availability of precision GPS-disciplined oscillators and the ability to carrier lock transmitters over considerable distances. However, where it can be demonstrated that use of precision frequency offset value other than 0.1 Hz is appropriate for a particular instance, a rule waiver should be allowed given an adequate showing. With regard to

⁵ For instance, see Annex 2, Chapter 4, paragraph 4.9.3 in the *Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2), Rio de Janeiro, 1981* and Annex 2, Page 4, Paragraph 1.15 of the *Agreement Between the Government of the United States of America and the Government of Canada Relating to the AM Broadcasting Service in the Medium Frequency Band, Ottawa, 1984* ("Canadian Agreement")

modulation delay between two transmitters in a synchronous pair, the Canadian Agreement recommends no more than 100 microseconds as measured at either transmitter site, however, we note that the expected artifacts would be within the localized synchronized system pair and would not impact non-related stations. As such, Cavell Mertz believes that this criteria be left to the discretion of the permittee/licensee.

Summary

Cavell Mertz believes that routinely licensing AM Synchronous Boosters would not adversely impact other users in the AM band, and would be an efficient use of the existing spectrum. Years of actual experience have shown that other stations on the same and adjacent frequencies from such facilities are not normally harmed by such operations, and that local fill-in service in areas of weak signal (or localized noise areas) can be readily achieved. Thus, no harm would be done to the status quo and another tool would become available for sustaining the AM service in the face of many well-known challenges. Accordingly, Cavell Mertz herein respectfully requests that the Commission favorably entertain RM No. 11779, and quickly move this process into the Rule-Making stage for further discussion and consideration.

Respectfully Submitted, December 28, 2016

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