


covering the full musical frequency bandwidth, would more commonly be required to meet simultaneous continuous power demands that are present in both channels (such as might occur when a pipe organ plays a sustained pedal tone in the deep bass).

In addition, the Commission stated in the NPR that a simultaneous power test of both the subwoofer and the satellite amplifiers would, from a practical standpoint, require a single test signal at the crossover frequency, or a single combination set of tones, such as the 60Hz–1,000Hz composite signal suggested by Velodyne. The Commission concluded that the resulting power and THD specifications might not be valid over the full frequency range over which each amplifier was designed to operate.

Accordingly, in the NPR the Commission proposed amending section 432.2(a)(2) of the Rule to include a clarifying note stating that, when measuring maximum per channel output of self-powered combination speaker systems that employ two or more amplifiers dedicated to different portions of the audio frequency spectrum, only those channels dedicated to the same audio frequency spectrum need be fully driven to rated per channel power.

b. *Discussion of NPR Comments.* The Commission received five comments concerning the proposed clarification of testing procedures for self-powered combination speaker systems. Thomson Consumer Electronics and Audio Research endorsed the proposal without qualification.²⁸ QSC Audio stated that it had no strong opinion on the proposed clarification, and was “* * * willing to support the proposed regime of loading only one frequency range at a time.”²⁹ QSC noted, however, that a “rational” standard for powered speakers would rate maximum acoustic output, distortion, and frequency bandwidth as a system, “* * * without regard for internal details such as amplifier power and driver impedance.”³⁰ QSC cautioned, however, that such acoustic measurements initially “* * * will not be familiar to consumers and such specifications tend to be overly detailed.”³¹

Two other commenters explicitly favored a testing protocol based on the acoustic output of the self-powered speaker system over a protocol limited to the performance of the amplifier(s) alone. These commenters proposed

testing procedures that would apply to all self-powered speaker systems, whether individual powered subwoofers, powered satellite speakers, or self-powered combination subwoofer-satellite speakers that share a common power supply. Specifically, EKSC commented that the separate testing of amplifiers contained in self-powered speakers “* * * does the consumer little good.”³² EKSC proposed a two-part test procedure that would measure (1) the total harmonic distortion produced by a self-powered loudspeaker when producing a sound pressure level of 96 decibels, and (2) the maximum sound pressure level the loudspeaker could produce without exceeding 10 percent harmonic distortion. According to EKSC, results from the first test would allow consumers to compare the harmonic distortion characteristics of self-powered loudspeaker systems when producing a standard level of sound pressure. The second test would provide consumers with comparative information on the maximum sound pressure self-powered speaker systems could produce prior to the onset of severe distortion.³³

CEMA also favored a test protocol based on acoustic output measurements for self-powered loudspeaker systems. CEMA commented that an amplifier power rating in isolation “* * * inherently ignores the performance capability of the acoustical portion of the system, and hence is incomplete and inaccurate as a performance comparison tool.”³⁴ CEMA stated that an appropriate acoustical output standard would measure such performance characteristics as the sensitivity of the loudspeaker system (expressed as sound pressure output level per input volt), and the maximum sound pressure output that the system can achieve within specified frequency bandwidth and distortion limits.³⁵

c. *Rule Amendment and Reasons Therefor.* Based on the comments submitted in response to the NPR, the Commission concludes that the most appropriate method of testing self-powered combination subwoofer-satellite loudspeaker systems under the Rule is to restrict measurements to the electrical performance of the component amplifier(s) alone, and to require simultaneous operation only of those channels dedicated to the same portion of the audio frequency spectrum. Three commenters endorsed this procedure or found it acceptable. None of the

commenters recommended any alternative method of measuring the power output characteristics of amplifiers contained in such self-powered speaker systems.

Two commenters recommended that the Commission reject any test protocol limited to measuring the power output of the amplifier alone, and proposed instead that the Commission develop and adopt a testing and disclosure methodology based on the acoustic output of the entire self-powered speaker system. The Commission does not necessarily disagree that, at least in principle, such a protocol would provide more complete and meaningful comparative performance information for consumers than would a protocol limited to the power and distortion performance of the amplifier(s) alone. The Commission does not, however, have the necessary expertise and resources to undertake such a complex and uncertain rulemaking proceeding. The Commission believes that the development of an acoustic output measurement and disclosure protocol for self-powered loudspeakers would be, more appropriately, the responsibility of industry members and their trade associations.

Further, many marketers of self-powered loudspeakers may well continue to advertise separate power output measurements for the component amplifiers in these systems before, and even after, any such acoustic output protocol is formulated. Thus, there would still be a need to clarify the testing procedure for self-powered combination satellite and subwoofer loudspeakers under the Rule so that consumers will not be confused by conflicting power output claims. The Commission believes, therefore, that the Rule’s continuous power output protocol and any future industry acoustic output protocol could coexist in a complementary fashion.

Accordingly, the Commission is amending section 432.2(a)(2) to include a clarifying note stating that, when measuring maximum per channel output of self-powered combination speaker systems that employ two or more amplifiers dedicated to different portions of the audio frequency spectrum, only those channels dedicated to the same audio frequency spectrum need be fully driven to rated per channel power.

3. Amendments to the Amplifier Rule Preconditioning Requirement

a. *Background.* Section 432.3(c) of the Rule specifies that an amplifier must be preconditioned by simultaneously operating all channels at one-third of

²⁸ Thomson, (4), p. 2; Audio Research, (2), p. 2.

²⁹ QSC, (3), p. 1.

³⁰ Id., pp. 1–2.

³¹ Id., p. 2.

³² EKSC, (1), p. 1.

³³ Id., pp. 1–2.

³⁴ CEMA, (5), p. 4.

³⁵ Id., pp. 4–5.

rated power output for one hour using a sinusoidal wave at a frequency of 1,000 Hz. The ANPR sought comment on whether the Commission should amend the Rule to reduce the preconditioning power output requirement from one-third of rated power to a lower figure, such as one-eighth of rated power.

CEMA supported reducing the preconditioning power output requirement to below the current one-third power, stating that the current requirement is "beyond what can be expected through normal use in the home" and is "harsh and unrealistic."

³⁶ CEMA, (1), p. 2.

³⁷ Id.

³⁸ Id.

³⁹ Velodyne, (5), p. 1.

⁴⁰ Wass, (2), p. 2.

⁴¹ Id.

⁴² Sonance, (3), p. 1.

⁴³ Id.

⁴⁴ Audio Research, (2), p. 1.

⁴⁵ QSC, (3), p. 2.

⁴⁶ Thomson, (4), p. 1.

⁴⁷ CEMA, (5), p. 5.

⁴⁸ Id.

⁴⁹ Id.

⁵⁰ Id.

period of thirty minutes did not provide
any technological justifications for the

proposed reduction of the 0.5 second delay in the transmission of the signal to the receiver.⁵¹ Thus, the Commission's decision to require the use of a 0.5 second delay in the transmission of the signal to the receiver is not supported by the record.⁵² (prop)

⁵¹ Audio Research, (2), p. 2.

⁵² QSC, (3), p. 2.

amplifier manufacturing and advertising costs that would benefit both small and large businesses. The Commission also concluded that the proposed clarification of testing procedures for combination subwoofer-satellite self-powered loudspeaker systems was the least burdensome application of the Rule among the alternative proposals suggested by commenters, and would not have a significant or disproportionate impact on the testing costs of small manufacturers of such power amplification equipment.

Based on available information, therefore, in the NPR the Commission certified under the RFA that the proposed amendments to the Amplifier Rule, if promulgated, would not have a significant economic impact on a substantial number of small businesses. To ensure that no significant economic impact was being overlooked, however, the Commission requested comments on this issue. The Commission received no comments on this aspect of its NPR. Consequently, the Commission concludes that a regulatory flexibility analysis is not required, and certifies, under section 605 of the RFA, 5 U.S.C. 605, that the Rule it has adopted will not have a significant economic impact on a substantial number of small entities.

Part D—Paperwork Reduction Act

The Amplifier Rule contains various information collection requirements for which the Commission has obtained clearance until August 31, 2002, under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, Office of Management and Budget (“OMB”) Control Number 3084–0105. In the NPR, the Commission preliminarily concluded that the proposed amendments to the Rule to clarify the manner in which the Rule’s testing procedures apply to self-powered subwoofer-satellite combination speaker systems, and reduce the preconditioning power output requirement from one-third of rated power to one-eighth of rated power, if enacted, would not increase or alter the paperwork burden associated with the Rule’s requirements. The Commission stated in the NPR that these amendments would not increase the paperwork burden for businesses because for purposes of performing the tests necessary for affected entities to make the disclosures required under the Rule amplifiers must continue to be preconditioned for one hour. In the NPR, the Commission also preliminarily concluded that the proposed amendment of the Rule to exempt from media advertising disclosure of an amplifier’s total rated harmonic

distortion and the associated power bandwidth and impedance ratings when a power output claim for an amplifier is made would reduce the Rule’s paperwork burden. Although the exemption for media advertising would

impact was being overlooked, however, the Commission requested comments on this issue. The Commission received no comment on this issue. Consequently, the Commission concludes that the

⁵³ 64 FR 36877, 36879 (July 8, 1999).

3. Section 432.3(c) is revised to read as follows:

§ 432.3 Standard test conditions.

* * * * *

(c) The amplifier shall be preconditioned by simultaneously operating all channels at one-eighth of rated power output for one hour using

a sinusoidal wave at a frequency of 1,000 Hz; *provided, however*, that for amplifiers utilized as a component in a self-powered subwoofer system, the sinusoidal wave used as a preconditioning signal may be any frequency within the amplifier's intended operating bandwidth that will

allow the amplifier to be driven to one-eighth of rated power for one hour;

* * * * *

By direction of the Commission.

Donald S. Clark,

Secretary.

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