

NRSC: Giving AM Radio A Second Lease On Life

By Len Feldman

When FM radio was introduced to the American public shortly after World War II, few gave the new medium any chance of succeeding. To be sure, the frequency response of FM was far superior to that of AM, but in those days there were few receivers around to take advantage of the band's higher fidelity. As for the absence of static ascribed to FM, those early sets were so insensitive (and early FM stations transmitted so little power) that, more often than not, unless you erected a good outdoor antenna, you were apt to get noisier reception on FM than you did on AM. To further impede the success of FM, the FCC switched frequencies for FM just as the new medium was getting started, thereby instantly obsoleting the few thousand sets that were already in the hands of the public.



Despite all of those obstacles, FM grew—slowly at first, then rapidly. With the introduction of stereo in 1961, the fortunes of FM radio really took off. At some time during the late 1960's or early 1970's, FM listenership in this country exceeded the number of listeners who still tuned to the AM band and the fortunes of the mighty AM stations began to decline.

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Technically informed people realized that there was a need for both AM and FM, and the AM station owners began to cry for help. Help was supposed to have come in the form of a decision to allow AM stereo to be broadcast. If AM fidelity was poorer than that of FM, at least listeners would be able to hear two low-fidelity channels—left and right signals that would provide the same sense of spaciousness offered by FM, if not the same extended frequency response.

We all know what happened then. First, there were five AM stereo systems, and the FCC, instead of opting for a single standard, decided to "let the marketplace decide." This was, after all, the period of deregulation and governmental laissez faire. The five gradually dwindled down to two—not so much because the marketplace had expressed its preference, but rather because the three proponents who threw in the towel simply decided that it wasn't worth the effort to fight for supremacy. In general, AM had been greeted by an extended yawn, as far as radio listeners and potential advertising sponsors were concerned.

And so the situation remains today. We still have many stations broadcasting with the so-called C-Quam system, developed and championed by Motorola, and other stations supporting the competing system developed by engineer Leonard Kahn and generally supported by Hazeltine Corporation. The yawn from the public is, if anything, louder than ever and no one seems to get very excited about AM stereo. That includes the manufacturers of AM tuners and receivers, most of whom have simply ignored the new transmission medium. Those who have built AM stereo sets have opted for

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one or the other of the two systems. Only a couple of models have actually been built that can receive both of these types of AM stereo transmission (which are, incidentally, totally incompatible).

With AM floundering, and some broadcasters fearing it's threatened with almost certain extinction, the National Association of Broadcasters (NAB) and the Electronic Industries Association, in a welcomed cooperative effort, got together and formed yet another acronym-blessed organization, the NRSC (which stands for the National Radio Systems Committee). Under the guidance of this committee, technical improvements for the AM band were considered and endorsed. These have been proposed as standards, and the FCC has been considering them.

By way of background, it's important to understand that in the past, AM radio stations have pretty much decided on their own just how much treble emphasis or boost to apply to their audio signals before those signals modulated their AM carriers. There was no uniformity at all. Receiver manufacturers, faced with this audio chaos, generally took the easy way out. Instead of trying to produce sets that would deliver half-way decent frequency response, they simply allowed the response to roll-off at anywhere between 2 and 4 kHz—hardly what anyone would call even "medium fi."

Part of the reasoning here was that by limiting audio bandwidth, they could also reduce interference from adjacent channels that were powerful enough to come through even when you were tuned to one side of them. Contrary to popular misconception, however, the FCC had never placed such a limitation on audio frequency response in the AM band. In fact, I know of at least one AM station in the New York area that for decades has been sending out audio signals whose frequency response equaled that of FM—right out to 15 kHz!

One of AM's advantages is its ability to be picked up at great distances from the transmitter (especially during evening hours). But it was this very advantage that proved to be a problem, for with the vast-

ly greater range of reception comes interference from stations in one geographical area being received in adjacent geographical regions. The first proposed standard created by the NRSC was a uniform preemphasis curve, much like the one used in FM. This 75 microsecond preemphasis curve, if adhered to by all AM stations, would allow AM set manufacturers to build their products with a complementary deemphasis curve, and all stations would come through with the same level of fidelity. The second improvement mandates that stations should transmit with an upper frequency limit of 10 kHz.

Now, 10 kHz may not sound like very high fidelity to those audio purists who believe that amplifiers must have response from DC to TV channel 5, but let me tell you that after you've heard AM reception

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that boasts even that modest frequency response, you will probably admit—as many listeners have—that it sounds nearly as good as FM. After all, in terms of the 10 musical octaves that humans can hear, cutting off response at 10 kHz means missing only one octave. Furthermore, even FM deprives us of half of that upper octave since its top response is limited to 15 kHz.

Many stations—as many as 20-25% of all AM radio stations—have already adopted the new standards promulgated by the NRSC. I wish I could say the same about AM set manufacturers. Even though the new standards have been publicized for more than a year, most of the AM tuners and receivers I've tested in recent months fall far short of providing the response and bandwidth needed to take advantage of the new AM signal quality. Perhaps many manufacturers haven't gotten the word yet, or perhaps they don't realize that providing their customers with high-quality AM as well as high-fidelity FM may just put them a bit ahead of their competition. Whatever the reason, this is another instance where the broadcast industry and consumer electronics manufacturers cannot only help each other, but can help the consumers that sustain both segments of the electronics industry. □