Utility Mode?

It is great to see *CQ VHF* back in publication. I subscribed to the magazine starting with the original edition in January 1996, and I was sorry to see publication suspended. Thanks to Joe Lynch, Rich Moseson, Dick Ross, the advertisers and you readers for bringing it back! The first issue looked terrific. I am humbled to be among such prominent people in Amateur Radio.

Now what’s this about “Utility” Mode, up there below the name of the column?

Our editor, Joe Lynch, sent me e-mail as the May issue was preparing to launch, asking what “tag line” I wanted up there – all the regular columns have them. And I thought… well, “FM, the Fun Mode” has certainly been beat to death. And besides, aren’t all Amateur Radio modes “Fun Modes?” What mode do you operate just for the pain and frustration of it? OK, there’s DX, meteor-scatter, HF traffic nets, moonbounce, cw, QRP, weak-signal VHF-UHF, microwaves, contests and a slew of digital modes. But besides them, *most* of ham radio is fun!

So now that we’ve narrowed down the audience, let’s get back to the question. What could I say different about FM and Repeaters? I’m normally a pretty creative guy, although my high-school English teachers (what, all nine of them?) might beg to differ. Deadline loomed, and nothing was coming.

Earlier this year, I wrote an editorial for the SERA *Repeater Journal* that lead to the idea. The editorial was in praise of outgoing editor Wayne Williams, K4MOB (now Silent Key). Wayne had been editing the *Repeater Journal* for 23 of its 26 years of continuous publication. Without doing any research or really giving the idea much serious thought, I wrote that the *Repeater Journal* was the only FM oriented magazine or column to survive over the years. I noted that *QST* had dropped their FM/Repeater column years ago, and even *CQ VHF* had gone out of production.

Of course, *CQ* editor Rich Moseson announced that *CQ VHF* was going back into production just as I sent that edition of the *Repeater Journal* off to the printer. And I had completely forgotten about Bill Pasternack, WA6ITF, and his columns in *WorldRadio* (and before that in *73 Magazine*). Bill has single-handedly kept FM and Repeater journalism continuously alive at the national level since the early 1970’s. He credits *73* editor Wayne Green, W2NSD, as being one of the few to recognize the rise of FM and give the mode significant publication space in its early years.

And while all that is very nice, the fact remained that there was something wrong in FM-land. Almost all active hams have an FM rig around somewhere, whether it’s an HT hanging from their belt, a mobile under the dash, or a rig at home collecting some dust at the corner of the operating desk. 2 meter FM is said to be the most popular Amateur band/mode by far. And yet this practically universal mode of operation has been unable to sustain much in the way of publication.

So I did some research, and it opened my eyes. The several hundred thousand hams who operate FM and Repeaters are not a “market.” They do buy radios, but they don’t, as a group, join organizations or subscribe to magazines. And this is especially true of the subset of those hams for who operate *only* FM and repeaters (the “shack-on-the-belt” ham, as some refer to them). That would be most of the huge number of code-free Techs licensed since 1992. The original *CQ VHF* was designed to appeal to those hams (and introduce them to the other VHF modes that their Tech license qualified them for). But they didn’t bite in large numbers. They didn’t join the ARRL, despite the League’s going to bat for them in support of the code-free Tech. And here in the Southeast, they don’t support the SERA *Repeater Journal*, a regional magazine that is purely FM/Repeaters, in anywhere near the numbers you might expect.

My Narrow Perception?

I’ve been a ham since 1965 (age 15). Today, I have an Extra class license, and I operate some HF (mostly SSB and digital, with cw limited to occasional bouts at Field Day). But since my first days as a Novice with a Heathkit Twoer, I’ve been a VHFer. I went through the 2 and 6 meter AM days with a Heath Seneca and Utica 650, and then SSB with a Gonset Sidewinder and Hallicrafter HA-2 transverter. But what really flipped my switch as an early ham was an old, single-channel Motorola 80D on 146.94 simplex, installed in the car of a teenage friend’s father. For you newer hams, this is an exercise in nostalgia that I don’t have space here to explain – I wish I could. I will note that the Motorola 80D was an FM radio that began life in a police car or taxi cab somewhere. It was a huge, heavy, all-tube radio that sat in the trunk and improved traction on the ice. Below the dash was a control head with volume, squelch, and the microphone and speaker.

Why this radio and the many that followed appealed to me more than anything else, I can’t explain. Maybe it was the “police” radio aspect. Maybe it’s because it was similar to the CB radios I’d used before I became a ham (back in the clean days, when CBers used call signs, real names and decent language). Certainly it had something to do with local communications. I liked talking to the guys around town much better than someone I didn’t know in New York, California, or around the world. I liked the idea of a bunch of hams all clustered on a single frequency. And for me, exotic DX was talking 300 miles on 2 meters.

It wasn’t long before I learned about repeaters, which enhanced the FM experience immeasurably (all four of them in the Chicago area at the time). My interest in VHF SSB waned. I had attended some of the early Central States VHF Conferences in the late 60’s, but never felt quite at home there. Putting up a multi-element array and building a VHF kilowatt seemed beyond my means and interests. Getting involved in a local repeater group felt comfortable – this was someplace where I could really participate.

I gobbled up all the available literature. It started with copies of a small newsletter out of California called “The Chronicles of 76.” That was just a local effort to document, and make fun of, the hams who put up repeaters and remote base radios around Los Angles. Then there was Bill’s “Looking West” column and the other articles in *73.* A short-lived publication called *FM Magazine* out of Michigan. Later, the FM/Repeater column in *QST.* And the ARRL’s old FM and Repeater manual.

So while my field of view in Amateur Radio covered the whole spectrum, so to speak, the sharp, clear center was VHF-FM. I was on the leading edge of a serious boom in a new mode of operating. It was all very exciting. And then . . .

Just Another Mode

While I wasn’t looking, FM became just another mode. At least that’s the consensus I got from some of the guys who have been doing Amateur Radio publishing a lot longer than I have. In the 1950’s, SSB was an up-and-coming mode, and the magazines had columns devoted to it – how to use it, who was on it. You wouldn’t think of devoting a column to SSB today, would you? Maybe AM?

Some columns devoted to sub-sets of Amateur Radio have lasted for decades. VHF-UHF is one. That’s the weak-signal side of VHF, not the FM side. Digital modes go through enough reincarnations to keep interest up. DX, contesting, QRP, holding their own.

But not FM/Repeaters? *QST* editor Steve Ford, WB8IMY, suggested why, and gave me the idea for this column’s “Utility Mode” tag line. He said, “Our research has shown that while FM users comprise a very large portion of the amateur community, the majority tend to perceive their FM activity more as a ‘utility’ function rather than a hobby.” He added that FM operation is local. If you don’t live in Seattle, you wouldn’t be very interested in a new repeater on the air there, would you?

I shouldn’t have been surprised. I’ve often felt that the people who build and maintain repeaters are unappreciated by most of the people to use the repeaters. The repeater is just a public utility, like the power company or the phone company. A hole in the band that makes signals to farther.

So now that I’ve thoroughly beaten myself down, let’s see if I can get back up again and stand tall!

While the vast FM user community may not feel much like a community at all, there is at least a half-vast community of hams who build repeaters, run repeater clubs, do band planning and coordination, and generally focus on FM. There always seems to be a new crop of hams coming along who are trying to learn the ins and outs of repeaters. Now and then there’s something really new, like the IRLP. And maybe even some of those shack-on-the-belt users are interested in what makes this utility mode tick. That’s one kind of ham that the new *CQ VHF* is designed for.

And that’s where this column will be pointed. I think that there are all kinds of things that make FM unique. Things that hams who build and operate in the FM universe will enjoy reading and writing about.

Help Wanted

But I’m going to need a little help here. Some of the columns ought to be fairly technical, and I am *not* an engineer. Everything I learned about repeaters and technology came through ham radio, mostly learned at the elbows of hams who really know their stuff. In his May editorial, Joe Lynch said, “Each one of us has a story,” and asked readers to share theirs by writing articles for the magazine. I’ll ask the same thing. Think of something you know, something that other FM oriented hams might find interesting, and drop me a line: kn4aq@arrl.net. I was discussing this column with a friend who I rely on for technical advice, and he said, “How many ways can you write an article on how to tune a duplexer or modify a MASTER II?” Well, let’s find out.

I might even get creative enough to come up with a better tag line!

Thinking Thin

They say you can’t be too rich or too thin. But you can be too narrow! Several of the new FM rigs on the market include a “Narrow” mode, like the Kenwood TH-F6 in the picture. If you’ve been around the block more than once, you’ve been calling the 5 kHz FM deviation we run today “Narrow Band FM,” or NBFM. And if you’ve stumbled across this setting in the radio (and didn’t read the manual), you may have said, “Well, this must be the setting I need” and punched whatever button it took to lock it in.

BZZZZZ! Wrong answer, but thanks for playing the game. Pick up your lovely parting gifts on the way out of the studio.

It’s time to recalibrate your vocabulary, and check the settings in your radio. The rules of the game have changed.

Back before the turn of the century, the FCC launched a campaign to create more channels for commercial and public-safety radio. Since there’s slim pickin’s on the spectrum tree, the other way to create more channels is to make the ones we have skinnier. Take advantage of advances in technology that allow us to reduce deviation, improve stability, roll off the higher audio frequencies, process the audio a bit and tighten the receiver filters, and - voilà! - a mode that used to gobble up 16 to 20 kHz of spectrum now uses only 11, allowing us to squeeze a new channel in between each old one. Your new standard: 2.5 kHz deviation, a tighter maximum of 3 kHz for the highest audio frequency, and 12.5 kHz channel steps. The price: obsoleting all the current radios and making everyone buy new ones.

To the old timers, this is déjà vu all over again. That’s exactly what started the Amateur Radio FM boom back in the 70’s. In the 60’s, to make more commercial and public-safety radio channels, the FCC cut the deviation from 15 kHz “wideband” to 5 kHz “narrowband,” and doubled the channels by cutting the channel width in half. Overnight, millions of expensive FM radios were traded in. Some of the economic sting was reduced by the fact that the solid-state revolution was getting underway, and companies and police departments were trading those big, heavy tube rigs in for… well, not quite as big but still pretty heavy transistor jobs.

Pre-Boom

And where did the old radios go? A lot of them went to the crusher (makes you want to cry), but enough of them found their way into ham radio for almost free that suddenly there was a boomlet in FM and repeater operation. This wasn’t THE boom, just a little pre-boom that set the stage for the big boom a few years later, after a bunch of repeaters had been built. The ham channels filled up quickly and hams had to adopt the 5 kHz bandwidth to make more channels. The sting of obsoleting all those radios was soothed by the fact the original radios were dirt cheap, big, clunky tube boat anchors, and that Icom, Yaesu, Kenwood and a few other Asian and American manufacturers started turning out small, solid-state rigs designed for the ham market. Might as well make them narrow band. And now, the big boom of the early 70’s got underway.

Like I said, time to recalibrate your vocabulary. That old “wide band FM” is ancient history. 5 kHz deviation FM, the bandwidth we all use today, is now “wide,” and the new 2.5 kHz standard is “narrow.” The FCC has had to back off of its timetable for total implementation of the new standard in the commercial world. Current users can stay “wide” for a while, but all newly created services are required to adopt the narrow mode. The Family Radio Service is one of the first examples. New services in the 220 MHz and 700 MHz areas will all be narrow, too. To be FCC certified, new commercial radios will have to be “narrow-ready,” though they can be wide-compatible dual-mode.

As long as the manufacturers had to build the narrow stuff for the business band, they started incorporating it in their ham equipment too, as a second mode. It sort of future-proofs the radio. Should ham radio ever adopt the new, narrow channels, the radios with the narrow mode built-in would still be usable.

Will ham radio go narrow? Perhaps. The 2 meter band is “full” in most metropolitan areas (and even most rural areas) of the country, and hams still want to put on more 2 meter repeaters. Most areas except California have room on 220 and 440 for a few more repeaters, but that’s going fast. But ham radio has a mammoth “installed base” of 5 kHz FM radios, and there will be tremendous resistance to replacing those radios. We buy them ourselves – there are no corporate profits or municipal taxes to draw on for radio budgets. I suspect it will take a more sweeping change, like a move to all-digital radios with really tiny RF footprints, to pry the 5 kHz radios from our cold, dead fingers… sorry, I got carried away there. The FCC is looking at digital for the business boys in 10 to 15 years. Place your bets.

Oh, I almost forgot. What happens if you select the “narrow” mode in a current radio when everyone else is “wide?” Your transmit audio will sound low and a little muddy. Low, because you’ll be down at least 3 dB from the widebanders, and muddy because, while we say our audio is tailored for 300 to 3000 Hz now, our radios really have a gentle rolloff at 3000, and there’s plenty of energy above that frequency. The new standard sets 3000 Hz as a brick wall, and there’s nothing above it. And the pre-emphasis/de-emphasis is handled differently (that sounds like meat for another column). If your radio switches in narrow IF filters, too, your squelch might chop closed on voice peaks. Some of the new radios do, some don’t.

Now don’t get me started on audio quality of current FM operations. There’s an epidemic of low audio out there already, and few rigs have mic gain controls to correct problems easily. But if everyone is telling you your audio is low and muddy, check your manual. You may just be narrow.

More Help Wanted

The word I’m getting is that repeater owners are having a harder and harder time finding good tower space at affordable rates (or free). As tower management and ownership is transferring to the hands of professional management companies, some ham repeaters are even being kicked off towers they’ve long called home unless they can come up with full commercial rates (hundreds of dollars a month, or more! Rule of thumb: $1/foot of HAAT/month). Ham radio public service value? Sorry, we’ve got a business to run.

If you run a repeater on a commercial tower, tall building or mountaintop, I’d like to hear from you, whether you have a good relationship going, or you’ve had trouble. Next issue, we’ll paint a portrait of the tower scene for ham repeaters. I know that this can be a sensitive issue for many repeater owners, so I’ll keep most of the published details general, and your information confidential unless you have a story that can be published. That number to dial: kn4aq@arrl.net.

See you in November!