

FM

35c

volume 2, number 9

IN THIS ISSUE

FCC INFO
PHONES PATCHES
TRANSMITTER HUNTING


**MOTOROLA
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AT
AMATEUR
PRICES**

See Page

21

OCTOBER 1968

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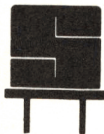
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FM

VOLUME 8 NUMBER 8

IN THIS ISSUE

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SEPTEMBER 1968



Last Month's Cover featured the Larsen Antenna Girl which we had been running a contest to discover her name.

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FM

OCTOBER 1968

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REALLOCATION

by Donald L. Milbury W6YAN

New FCC plan brings long-sought relief to land mobile services

The giant wheels that began to turn when the FCC first recommended abolishment of overrestrictive phone tariffs continue to roll; and the watchful eyes of curious observers are now witnessing what may well amount to the chewing up and plowing under of once-sacred frequency allocations -- constricting assignments that were a sight more sound on paper than in practice.

The recent sweeping recommendations of FCC decision-makers have startled some, horrified others. But all FCC-voiced comments are showing a new sensitivity to the needs of industry, the demands of progress, the broadening scope of the art, and the always increasing spectrum immigration.

The latest important recommendation -- which, like the phone tariff case, will likely be favorably acted upon -- is for the crowded land mobile services to share some of the unassigned spectrum acreage now held in reserve for UHF television stations. The plan calls for the lower UHF segments (channels 14 through 20) to be opened to land mobile services in areas where no interference to UHF television would result.

The master allocation plan, expected to be meshed into operation over a decade, calls for reassignment of channels 2 through 13 to the UHF range, opening up a vast range of VHF frequencies for future assignment. How the spectrum-sharing proposal -- which is expected

to be enacted immediately -- will affect this master plan remains to be seen, but some impact is certain. Some experts are already postulating opinion, the consensus of which is that TV reassignments will be made in the upper UHF range, leaving the lower portions -- in most urban areas -- for land mobile assignments.

The upper portions of the UHF region didn't come out unscathed, however. The FCC proposal called for "reserving" a 75-megahertz spectrum chunk for common-carrier use and a 40-megahertz bite for local government and private industry.

One thing is clear: A very precarious coordination job lies ahead. With land mobile and TV sharing, frequency assignments will be made with more scrutinizing consideration than ever before. And adding to the headaches of the coordinators will be the influential protests of the TV networks and the thundering roars of the independents.

Without a doubt, the FCC has found a way to ease the critical spectrum shortage. But the solution is tentative, impermanent -- and the road is beset with obstacles that appear insurmountable to many. The salvation is more in the action than in the course, though; and the land mobile services can at last be assured of ultimate and final relief -- sooner or later.

TRANSMITTER HUNTING . . .

AM SPORT ON TWO FM

by
PAT DEVLIN K5BPS

Idle channel monitorers around Tulsa, Oklahoma might have thought there were a bunch of dopeheads on the frequency a few Sundays ago... with such comments as "Gimmie another fix"... "I'm getting hot now." But never fear, the hams in Tulsa aren't on pot. They are just out on another of their two-meter transmitter hunts.

For years the low-band boys have had transmitter hunting sewn up. But that was before the birth of two-meter FM around Tulsa.

Two-meter FM'ers have 90% of the battle licked with their equipment and its built-in metering circuits, the high sensitivity of their receivers, and availability of highly directional antennas.

The members of the Tulsa Repeater Organization have been sponsoring transmitter hunts for several years now. It's a good fun club function and keeps the members skilled in tracking down illusive signals should the need arise. The latest hunt staged by Tulsa really had the hunters scratching their heads for a while.

Sneaky Ray (W5LJW) had the honor of hiding the transmitter because he had won the previous hunt. Ray conspired with his daughter, Diane, and came up with a classic indeed. Ray rigged up a Handie-Talkie and small tape recorder with a voice-operated relay. On Ray's



"Hold it!
... I think I've snagged a branch!"



"Well...
at least I know which WAY he is!"

spoken command, the hidden transmitter would sign on and transmit for a few seconds and then sign off. Ray and his daughter then disguised the whole mess in a baby carriage. The transmitter and recorder were covered with a blanket. Only the tip of the 'Talkie antenna



"This way, Honey!
... You can make it...
... just a few hundred more yards!"

stuck out of the perambulator. Ray's daughter stationed herself with the carriage in a local city park with a good book.

Even after the hunters had found Ray, they couldn't find the transmitter. Ray would say "The next transmission will be from the W5IJW hidden transmitter." And sure enough, the transmitter would give a fix; and what really threw the

"Wow!
... Grab a gander at this S-meter!"



hunters was that the hidden transmitter was very definitely modulated by Ray (who was standing there with a smug grin on his face all the time).

Some say the only reason the transmitter was found was that somebody began to wonder why that kid in the buggy was all covered up in a blanket in 98 degree weather!

Hunting the Elusive Transmitter

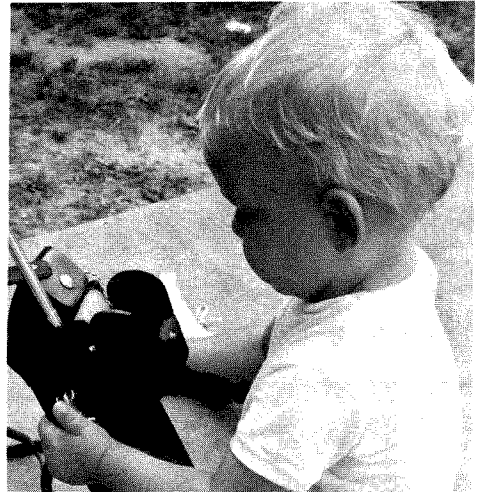
About all that is needed to hunt is a meter to monitor the first limiter of the mobile rig and some sort of directional antenna.

Practically everything from a wet finger held next to the coax connector to a cubical quad has been tried for search antennas.

The author has experimented with directional loops and found them to be less satisfactory due to low sensitivity.

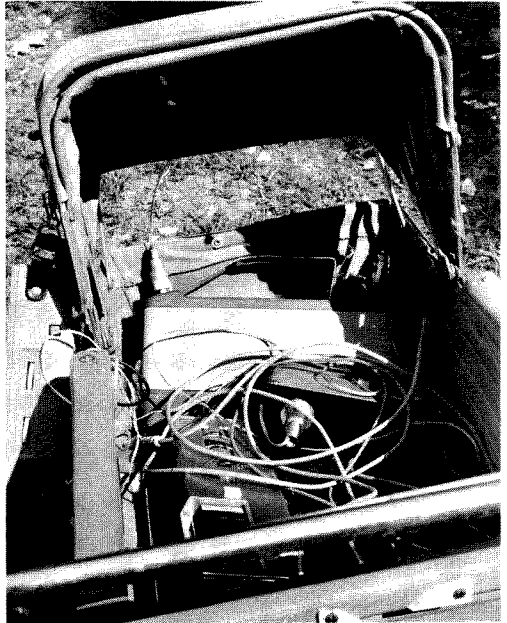
Most of the hunters have now settled on 4- or 5-element beams held out the car window on a broomhandle. Since beams offer high gain, they work well when the signal is weak; however, they tend to lose their directional characteristics when in a high-signal-strength area be-

"Now let's see what this thing can do in terms of down-to-earth directivity!"





Rockabye radio



GAD! WHAT AN UGLY KID! ▶

cause they cannot decrease the signal sufficiently for a good meter indication. For this reason most hunters using beams will also include a sliding attenuator in the antenna line to reduce the signal strength going into the receiver.

When close to the transmitter, portables and 'Talkies are often rigged with meters and beams for that last fix or two.

Rules for the Hunt

Generally, all hunters must begin at the same point. The winner can be determined on the basis of first-in wins, or for a more sporting hunt, each hunter gives his starting mileage and is given

a point for each mile driven. Each hunter is also given a point for each fix he requests. The first-in gets 5 points subtracted from his score, second-in 3 points, etc., so that the emphasis is more on technical skill and cunning. Naturally, lowest point-score wins.

Transmitters can be hidden in any number of ways -- mobiles, hand-held units, up a tree, in the bushes. The primary criterion is that the hidden transmitter must be on public property.

One suggestion for groups just starting: Don't make the first few too difficult; then, as the hunters gain skill and develop more sophisticated equipment, have a mad ball!!

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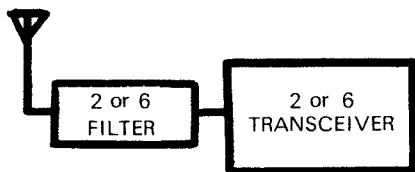
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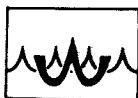
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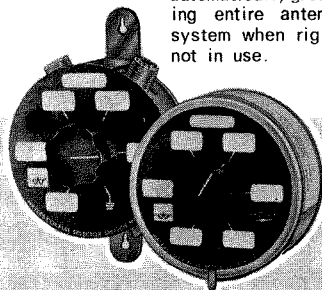
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LANDMARK DECISION GIVES GREEN LIGHT TO PHONE PATCHES

Thanks to a recent FCC mandate, the employment of phone patches by amateurs need no longer be feared. The Commission's decision came after a lengthy court battle between Carter Electronics Corporation and several large telephone companies. (See: "Are Phone Patches Legal," K6MVH, 73 Magazine, May 1968.)

The FCC acted in response to recommendations from the Federal District Court which held that the original anti-patch ruling (Tariff 132) contained a blanket prohibition against all attachments, regardless of whether or not they might prove harmful to telephone service.

The Carter firm, based in Dallas, Texas, was enjoined by the courts in 1965 from marketing a harmless gadget used to couple audio from a telephone handset to a radio transmitting/receiving system. As a result, Carter brought suit against AT&T, Bell, and General Telephone for "antitrust" business practices.¹

Carter confronted serious obstacles along the way, but the company was convinced that the banning of its device amounted to unfair restraint of trade. A major battle (but not the war) was won when an FCC examiner agreed that the Carterfone device was an illegal attachment, but recommended the device be excepted from the restrictive tariff because it was an unwarranted stumbling block against a user's right to use his phone "in such a way that is privately beneficial without being publicly detrimental."²

Although not specifically cited as a determining factor in the issue, other concurrent court actions are believed to be contributory to the FCC ruling in favor of attachments. The most heavily publicized of these actions was the "restraint of trade" case against two representative phone giants by the Private Communications Association, in which the PCA accused the phone companies of disobeying direct court orders governing unfair trade practices.³

Although the Carterfone case was only recently settled, there was surprisingly no big splash in the trade journals. The typical response was a terse paragraph or two covering the barest essentials.

The major impact of the FCC's decision, of course, affects the amateur considerably more than the commercial two-way radioman. One area likely to change as a result of the ruling is the article material carried by QST. A traditionally ultraconservative publication, the organ has blithely ignored the existence of phone patches over the years and has avoided references to their use in its articles. The status of complete legality that phone patches enjoy should result in the broadening of the ARRL's thinking along these lines before long. Evidence of this is already beginning to show. According to reports from informed sources, the ARRL has agreed to allow the term (phone patch) to be used in QST so long as it is enclosed by quotation marks. In five to ten years, the quotes will disappear and even the

League will have fallen into line with conventional amateur thinking.

Fortunately for the telephone companies, their restrictive power wasn't stripped completely by Carterfone's historic victory in the federal courts. They were left with some power to ban attachments, but the sting of enforcement was removed. Now, when the local phone company feels that a phone patch or other attachment is detrimental to the existing landline system, it is the responsibility of that company to prove it.

The FCC's statement was: "We are not holding that the telephone companies may not prevent the use of devices which actually cause harm, or that they may set up reasonable standards to be met." Most informed observers now believe that a comprehensive set of "standards" will be filed, but they will not bear the power of precluding careful interconnection of noninterfering attachments.

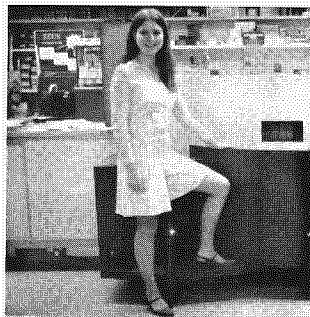
The "standards" clause should serve to protect the phone companies against wholesale abuse of the telephone by individuals with a flair for tinkering. The existing telephone line is a balanced system that cannot tolerate impedance mismatches, excessive levels, and other abnormal conditions. An amateur who intends to connect an external device should make it a point to know how to make a connection without upsetting the normal balance.

REFERENCES:

1. Electronic Design, "FCC Overrules Itself," 18 July 1968.
2. Electronic Design, "FCC Weighs Wider Use of Telephone Attachments," 8 November 1967.
3. Communications News, "Hot Line," December 1967.
4. 73 Magazine, "Are Phone Patches Legal," K6MVH, May 1968.

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Circle Number 10

The Community FM Clinic

by Scott Kostenbauder W3WLF

I'd like to pass along this idea so that others might be encouraged to schedule a similar activity, either for maintenance or initial tuneup. State College happened to be an area of no ham FM activity until late in the fall of 1967 when two of us started to play with some really dirty 450 MHz Motorolas we had bought for \$15 to \$20 apiece. They were given the solvent bath treatment, re-tubed, and tuned up in the ham band. Time passed, and I got a ham here and a ham there to join us on 450.

In April two of us started on 2 meters, following a similar procedure. We decided we needed to find more equipment, and more people would follow, we hoped. It worked. Some \$25 in phone calls put us in a position to equip all the local hams, and then some, at a price attractive enough that the 12-year-old novices in the community could also afford a unit. (Put your pencil and paper away -- I don't have any left.)

Now we had 40 hams with equipment who didn't know what to do next. A lot of Xeroxing later, there were enough diagrams to go around, but that still left the expertise needed to utilize them in short supply. While hard at work (?) in my office, I conceived the idea of an FM clinic consisting of several sessions where the technical help and equipment would all be at one place to help people get started and also insure that all equipment would be adjusted to commercial standards. I contacted K3CXZ, who also thought we should try it and agreed to bring a Hewlett-Packard VHF counter for frequency checking.

On the first appointed day we assembled and started. The tubes of all the tube-type equipment were checked and replaced where necessary. Then alignment began. The 455 IFs and the receiver oscillator multiplier chain were aligned at one station and then hi-IFs and RF stages were tuned at the next station. Transmitter alignment, followed by frequency and deviation checks, produced a perfectly aligned FM rig ready to go. Every attendee having a rig aligned learned something about the process and also picked up a few tips not in the instruction manuals. Each rig took 25 to 35 minutes to do. Most of the hams that had tried alignment on their own had worked 4 to 6 hours and still weren't sure of the job.

Three weekend sessions later, we had accommodated most of those interested and greatly enhanced FM activity in the area. We used .94 for simplex operation, figuring that those who really were serious about FM would follow up by getting .34/.76 rocks for repeater use at a later date.

Other groups of individuals or clubs should be able to increase activity by group purchases of equipment and by holding clinics as we have done. Only one problem has arisen as a result of these clinics. I'm convinced I've got to have a VHF counter. Anyone know where I can get one cheap? It's such a neat gadget!

PARA-TYPE
PRESSURE LETTERING

THE DAY

FM

TOOK OVER

by Scott Kostenbauder W3WLF

Every year in the community of State College, Pennsylvania an annual Fourth of July Fireman's Parade is held. In the years past local amateurs have had the traditional responsibility for organizing and positioning units of the parade aided by the use of mobile and portable ham gear for communications. These past years have been lean years because of difficulty in finding enough ham gear (six-meter AM variety) to fully cover each of the five divisions of the parade. A standing goal was to have enough gear to put a minimum of one unit with each division and several en route.

Quite often six-meter or similar equivalents were used and the hills, the distances, and ignition noise from the 1927 fire trucks were just a little too much for good communication.

This year was different. That's a very conservative way of saying we left our six-meter AM and SSB gear home and used FM portables and mobiles.

It hadn't been easy, but I had found a good size source of FM gear and had equipped anyone that had desired it at a dirt-cheap price--so cheap I won't even tell you because I don't want to answer the volume of mail I'd get (and also because I don't have any more).

There was another little matter: crystals. Local hams went together to buy crystals at a quantity price. Now realize most crystal manufacturers take 30 days on orders of over 10 crystals. We wanted 61 crystals. I selected a supplier and sent off the order. Then I began counting days. On Monday, five days before the parade, I began to wonder. Well, why not call the rock chippers at work? A three-dollar phone bill later I at least knew that three-

quarters of the crystals would be mailed the next afternoon. Would our crystals make it before Saturday at 4:00 p.m., when the organizing chatter for the parade needed to begin? Plans were laid to set up a field alignment station on the curb at the parade site if the crystals showed up in the post office box after 1:00 p.m. Saturday.

Early Friday morning a package appeared in my box. It wasn't there long enough to get comfortable. A post office clerk was to call a local ham friend, alerting us to pick them up. I had the crystals before he made the call after placing them in my box. It wasn't that I was anxious, but I think the post office supervisor was ready to call the local constabulary to check on the nut who kept opening a post office box every half hour for the last day and a half.

I didn't really want to go back to work that afternoon anyway, so I got ready to rush home to see if I could get a unit working. Some liaison with K3AKR had him at my office door quickly (he works at a plant three miles away). He also went home and used some kind of "poor sick aunt" routine on his secretary for an excuse.

Several of us had been using .34/.76 around town, but had never bought .94 crystals, so we tried to get our own .94 units going Friday night. Saturday morning we tackled eight more for other hams. Receivers were easy because of an FM clinic held a week earlier to align them on a mass production basis. Following transmitter alignment, deviation, and frequency checks, we sent one after another happy ham home humming to himself.

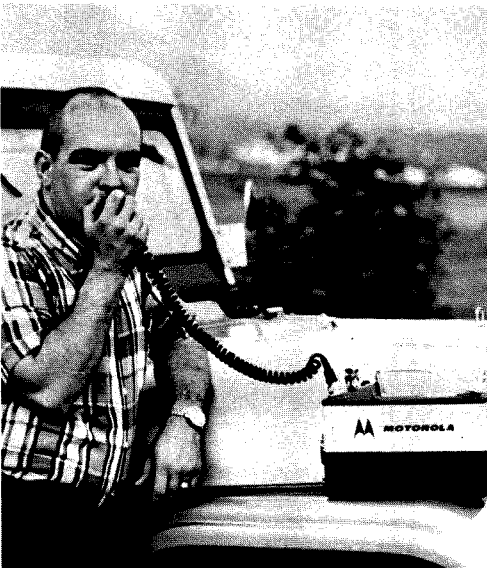
At 3 p.m. I decided to go home and eat breakfast before the parade. The FM

activity was startling. It was the first time I had heard more than the other four FM'ers in the area. The FM population grew by ten on that day alone not counting the current aftereffects.

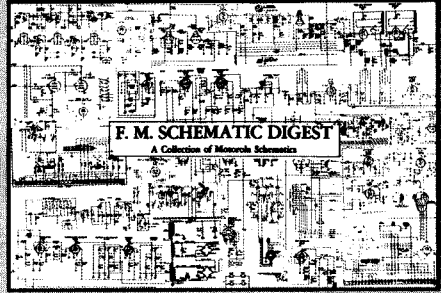
At 4 p.m. there were a lot of guesses on how good our coverage would be. They ranged from "Well, the FM portables can cover around here but not the full parade route. We'll have to use six-meter AM for that," to "Waddya wanna use six fer?"

After 4:15 virtually all six-meter activity had ceased. FM had taken over from one end of the route to the other. Five miles of hills was a snap for even the one-watt portables to cover. No meeting was held after the parade to discuss communication problems because this year there weren't any. Communication was superb and a new high was set in ham service to the community.

Before they went home, the one or two diehards who had showed up on six stayed around to ask if I would tune up their FM portables the following week. We had revised the old cliché to read "If you can't lick 'em, convert 'em." A very successful day all around for the growth of ham FM.



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in 15" cases

Units complete with cables, multi-freq. control

head, speaker, microphone, control relay and

fuse block \$128.



450 MHz USERS

Gregory Electronics offers you a large selection of Motorola T-44 Series U.H.F. equipment.

Complete with cables, control head, speaker, microphone, control relay and fuse block.

All units are 15-18 watts in 15" cases

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With the conversion data in the schematic digest seen above, you can be on 432 MHz in no time!

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DIAGRAMS
for G-E 2-way
FM RADIOS

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Pre-Progress Line

(1949-55)

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72-76 MHz

VOL. 2

Pre-Progress Line

(1949-55)

150-174 MHz

405-425 MHz

450-470 MHz

\$4.50

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General Electric
4ES14A

6/12V • 450-470MC
12-15 Watts

less accessories

\$38

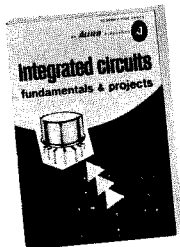
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FM Reviews



New Book--Integrated Circuits,
Fundamentals and Projects
(New from Allied Radio Corp.)

With all the amazing developments in electronics, few rival the introduction of the integrated circuit (IC) which may have greater influence on the design and application of electronics products and systems than any other single component since the vacuum tube.

This new book by Rufus P. Turner, Ph.D., of California State College at Los Angeles, covers the historic and technical development of the IC, its general features, types, and--most important--applications.

The reader will learn how this device can contain, in an area as small as 1/20 of a square inch, complete electronic circuits consisting of scores of transistors, diodes, capacitors, and resistors, permanently connected and extremely rugged.

Experimenters will be guided in the use of the device in inexpensive building projects. The book provides details on assembling such useful circuits as audio preamplifier, high-gain preamplifier, quarter-watt audio amplifier, crystal oscillator / frequency standard, af / rf signal tracer, and dc voltmeter.

The book runs 96 pages, paperback. Published and sold (75¢ postpaid) by Allied Radio Corporation, 100 N. Western Avenue, Chicago, Ill. 60680.

DEVIATION SETTING by clever estimating

by Bill Harris K9FOV

An overmodulated FM signal may sound raspy to one listener and clear to another. The human ear tends to be a rather inconsistent indicator. Setting transmitter deviation by reception reports, though sometimes necessary, is seldom a satisfactory approach.

If one uses a good FM receiver to monitor for distortion, and employs the ear merely as a "go-no-go" indicating device, the adjustment can be made with at least a "passing" degree of accuracy.

Take a properly operating receiver such as Motorola, GE, or RCA that is known to be in good alignment and sensitive. Good alignment is an **ABSOLUTE NECESSITY!** The receiver should be one on which the squelch will open fully on a signal that is not quite full quieting. Key the transmitter in question within the local coverage area of the receiver so as to provide a full-dead-quieting signal in the receiver. Check to be sure the transmitter is netted to the receiver to within 1 or 2 microamperes. Whistle about a 1 or 1.5 kHz tone loudly, cleanly, and continuously into the mike, while adjusting the deviation control until the squelch cannot be quite "whistled closed" in this manner. This method even compensates for the presence or absence of audio rolloff filtering in the transmitter audio, since the receiver noise amplifier actually measures overall distortion of the received signal. Thus, the transmitted deviation will closely approximate the measuring receiver's bandwidth characteristics.

I have bench-checked many rigs, both wide and narrow, that have been set in this manner, and can report better than 90% accuracy, with all errors being on the low side rather than the high side.

LETTERS

.34 - .94 MESS

Having operated on a 450 to .94 remote station (WB6SLR) for a few years, I have learned the value of a "talkback" (the repeating of an active channel to an inactive one). After reading the letters and editorials concerning the .34/.94 problem, I feel that a talkback is the solution.

Instead of having a choice site repeating .34 to .94, why not have it the other way around? This would allow standard type communication on .94, and would provide enhanced receiving coverage for any station listening to .34. This would help create a less cluttered channel.

I think that the advantages of a talkback-type system over a .34-to-.94 system are quite obvious and should be seriously investigated.

Ed Schuller WB6UPH
2326 Van Wick Street
Inglewood, California 90303

MANY SUCCESSFUL REPEATERS ALREADY EMPLOY THIS CONCEPT; THE .82-TO-.70 REPEATER IN YOUR OWN AREA IS A TYPICAL EXAMPLE. UNFORTUNATELY, SUPERSENSITIVE EARS ARE NOT AS IMPORTANT TO SOME REPEATER OWNERS AS A SUPERLOUD VOICE, AND THEY WOULD RATHER DUMP A CRUSHING SIGNAL ONTO A CROWDED CHANNEL AND BE HEARD BY ALL THAN TO SILENTLY HEAR ALL WITH AN OFF-CHANNEL TALKBACK.

This letter is being written particularly in reference to a letter published in the August issue from Terry Hancock, WA9KLZ. While I think his idea may be a good one, it seems to me that he is going about it in the wrong way. .94 is, or has been, a calling frequency.

However, it seems to me that the majority of repeaters operate on a .94 output. Rather than attempt to change so many repeaters, why don't we FM'ers, as a whole, revise our thinking along the lines I will outline below. I notice in your comment after Terry's letter, you mention that "FM Magazine will support any organization willing to undertake an attempt to change this adopted channel." It seems to me that for practical purposes it would be a lot harder to change all repeaters than to change calling frequency. Across the southern tier of New York State, there are a number of us who are becoming interested in getting some repeaters up and we have tentatively and informally come to the conclusion that .34 in and .94 out should be the repeater frequency.

We are thinking of using some other frequency such as .76 as a simplex frequency. Why not, if we are going to have some sort of national plan on this sort of thing, make .34/.94 a nationwide repeater channel, something like .76 a nationwide simplex channel, and then talk about using other frequencies to suit the needs of the particular FM'ers in any given area? With the increasing information available and equipment to do the job for multifrequency operation, this seems to be a practical plan. I, for one, would like to offer this as a counterproposal to Terry's.

Let me emphasize that I am not against the idea of a calling frequency; in fact, I think there should be one. It just seems to me that from a practical standpoint, it would be a lot simpler to change the national calling frequency rather than to change the frequency of so many repeaters already in operation. At the risk of stirring up an unnecessary controversy, albeit one which might add a little spice to our lives, I would be very interested in hearing comments from

others on this subject both pro and con. Interested FM'ers may either contact me directly or, preferably (for wider dissemination), through the pages of FM Magazine.

David G. Flinn W2CFP
10 Graham Rd West
Ithaca, New York 14850

I am of the opinion that most FM'ers in our area believe that repeaters should be kept off 146.94. We are in favor of the 146.34 input, 146.76 output system currently being used in many areas. One repeater is moving to these frequencies. A good choice for a second set of standardized repeater frequencies would be 146.46 input and 146.88 output. I understand there are several repeaters using this set already. It may also be worthwhile to list 146.70 as a "national FM RTTY" channel.

Frank J. Cerny K9VVL
8922 West 24th Street
North Riverside, Illinois 60546

ARRL

I would like to congratulate you and your staff on a job well done! The FM amateurs across this country have long needed a nationwide journal such as this to unite their efforts. We have been given the cold shoulder by the ARRL long enough; now we have a publication that will print FM articles, and I hope a national FM organization is just around the corner. Through your efforts I believe the ARRL is just about beginning to wake up and count the multitudes of FM operators -- about five years too late.

Frank Cerny K9VVL
8922 West 24th Street
North Riverside, Illinois 69546

I enjoy and appreciate ALL the articles (regardless of their nature) by Ken Sessions and I sure appreciated his editorial, "The FM'er and the Law" in the July 1968 issue. I would like another copy of the July issue if you have any

left. As soon as I can get \$12 together I wish to take advantage of your offer for a free Sentry crystal with a subscription to FM for 5 years.

I am wholeheartedly in favor of a national FM organization so that we FM'ers can have a very strong voice concerning any proposed rule change by the FCC or the ARRL. Although I am an ARRL official (vice director for Western Colorado) I have been very disappointed by the ARRL apathy in publishing articles and giving strong support of VHF FM in regard to RACES, AREC, etc. CQ magazine, on the contrary, has published articles about VHF FM for quite some time. I commend them for doing this as well as any other such general amateur publication that has done so.

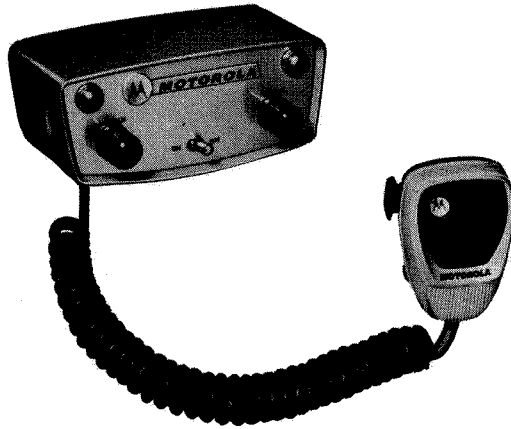
I am very happy to see a two-meter, solid state, FM radio (ICE) as manufactured and advertised in FM. I am sure that the International Communications and Electronics Company will have very little trouble selling such a product; we FM amateurs have desperately needed such a neat-appearing (and high performance) two-meter FM radio for many years. I wish ICE all the success in their venture. As soon as I get the brochure about this two-meter FM radio I shall show it to all the FM-minded VHF'ers I know.

N. K. (Nate) Bale W0PXZ
Grand Junction, Colorado

I HAD THE PLEASURE OF VISITING NATE IN GRAND JUNCTION A MONTH AGO. HE REALLY ROLLS OUT THE RED CARPET FOR FM'ERS, WITH AN UNENDING SUPPLY OF COFFEE AND SNACKS.

First, congratulations on new format, etc., on FM. It's a beaut!

Not being too sharp on FM as a mode, I'm studying all I can. Also, the Iosco Amateur Radio Club now has a subscription, and I hope we can get enough interest to get some of the gang on two meters FM.



MOTOROLA GEAR AT AMATEUR PRICES

Since the beginning of human life, man has sought for new and better ways of doing and obtaining things easier. Instinctively he has tried to make swaps and deals to better what he had accumulated. Today, we search for ways and means where our dollars will stretch to their highest value. You need not look beyond Spectronics, Inc.

Perhaps at this point we should introduce ourselves so that you will have a clearer idea of our goals. Spectronics, Inc. was formally organized in March, 1968, as an independent company to provide used Motorola communications gear to the FM Amateur. We do not sell equipment to the commercial trade. Our sales are restricted to amateurs and proven non-commercial experimenters.

Our prices are and will continue to be lower than any other regular source. Our stock is entirely Motorola equipment, being, for the most part, traded-in discontinued models and some engineering samples, etc.

All sales are on an "as-is" basis. We believe we have the greatest concentration of Motorola mobile gear and odds and ends available anywhere! Up until now, we have been handicapped by being located in temporary quarters. We are now in our new, 5,000 square foot, air-conditioned home and wish to let the rest of the amateurs know about us.

Art Householder (W9TRG) is our sales manager and he's the type of guy who will knock his

brains out for the boys. From our present equipment listing, just compare some of these Motorola buys:

450 MHz

T44 A6A w/acc \$50 - T44 AAV w/acc \$60
L44 AAB Desk Top Base Station \$140

Low Band

FMTR-80D 12V w/acc \$40
FMTR-140D 12V w/acc \$50
T41GGV-1 w/acc \$80 - T51G-1 w/acc \$80
FSTR140BY Desk Top Base Station \$150

High Band

FMTRU-41V 12V \$40 - D43GGV-1 \$90
FMTRU-80D 12V w/acc \$50
H23-10 less mike \$35

We invite you to come see us the next time you are in the Chicago area. I'm sure you will like what you see! We are closed on Sunday, Monday and Holidays. Note: We sell to Amateurs only! All equipment sold as is. Prices F.O.B. Oak Park, Ill.

To receive our complete listings of Motorola equipment please write today or circle number 15 on the reader service card in this book.

Walter Montville
Walter Montville
President

SPECTRONICS, INC.

1009 Garfield St.

Oak Park, Ill. 60304

Phone: Area Code 312-848-6778

Have noted occasional letters to editor casting bad-mouth words at ARRL. I'm not trying to defend it (member for 15 yrs) but did count through the August issue of QST and noted in the station activities that of the 70 sections of the League there were 14 mentions of two meters FM (20% showing) as well as 20% mention of activity actual or proposed on FM repeaters. Publicity is sneaking in now.

Hope to be mobile with an 80D in a few weeks. Am a bit concerned as a potential user of repeaters over the inconsistencies shown by .34 to .94 repeaters versus .34 to .76. I hope everyone eventually standardizes on .34 to .76 and leaves .94 for simplex. As an outsider, my opinion doesn't count much, but am going mobile through the west next summer, and don't know exactly how to tool up the rig unless I put in crystals for both repeater nets.

John Alexander W8GZF
Vice-President Iosco County Amateur
Radio Club

A QUARTER'S WORTH

After reading a number of your issues I would like to put in my two bits.

I think you would do well to have articles by Byron Kretzman. I also believe that someone should compile data and schematics on other manufacturers' equipment as has been done with the Motorola line in the FM Schematic Digest. There are many potential FM'ers who would need information on various manufacturers' lines. For example, I have been looking for information on an "Industrial" brand high-band pack set and a Link low-band system. If such a book could be put together, it could be invaluable and a start for many people.

As for your list of repeaters, there is a six-meter repeater located in Vancouver, Washington, operated by the Lower Columbia Willamette Valley Amateur Radio Club, WA7AJF, 622 N. W. 86th St., Vancouver, Washington (for republication verification,) and

another two-meter unit in Eugene, Oregon, operated under the call K7TPL, I believe.

I would like to see some of the more notable mobile and base stations featured in the FM Magazine also.

Keep up the good work; your magazine is just what we need in the FM world.

O. C. Warren WB6ZGE/W7TIO
410 East Hellman, Apt H
Monterey Park, California 91754

WOW!!

Dear mr. phoi

I am writing to you about my subscription for the FM magazine in fact all the California amateurs the that sent in their subscriptions are wondering where the august magazine is and what is wrong back there would like to say this much and that is if you are going to put out a the f.m. magazine for all of us that are on f.m. why dont you get on the ball back there and get going if not by the dam pleas send back my money back to me if i pay for something i except to get what i subscrib for so I am asking you to send my august f.m. magazine or else send my mony back to me here the month of august is half gone and stell no magazine as of yet lets get on the ball back there and get going if you expect to do your job right and do a good job at that i am speaking for all the amature radio of California and heres hoping to hear from you real soon now and heres Thanking you so Very much

Sic - ed.

VACATIONING?

Your publications are being received here, and it is good that your subscriptions have increased so. Recently (about 11 days ago) I ordered a receiver crystal from Sentry, and to date no response from them. Are they on vacation now? I'd appreciate a note from you

on this. Thanks for your invitation to submit an article on the MARS repeater in this area, but the repeater that I sometimes am heard through is in another MARS district, and I haven't that much data or authority concerning this operation.

Frank F. Simpson W4ISS/A4ISS
2643 Hillcrest Avenue
Augusta, Georgia 30904

NEWFOUNDLAND

Please commence my two-year subscription with current issue and advise what copies of back issues are now available.

For your information we have a repeater operating in St. Johns, Newfoundland running 250 watts output on 146.94 with an input frequency of 146.46. The repeater is situated on the television transmitter site of CJON, and was largely a project of hams employed by this station. There are approximately 30 hams on two-meter in this area at present. I have just returned from an 8000-mile auto trip to Edmonton, Alberta and was able to get in on the two-meter activity in Quebec City, Montreal, Ottawa, and Sault Ste Marie. No luck in western Canada.

G. L. Kennedy VØIEC
P. O. Box 863
St. Johns, Newfoundland
Canada

ALASKA

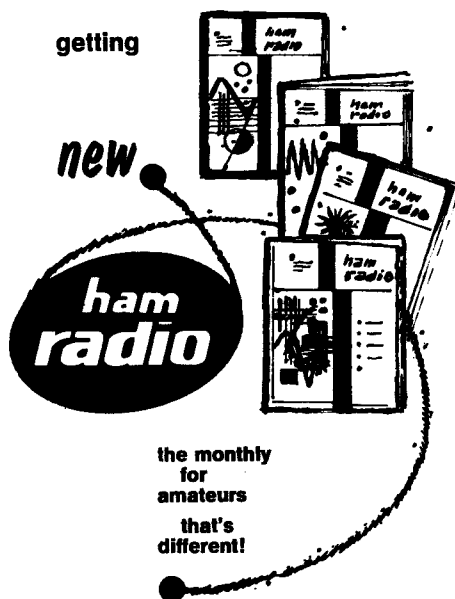
There are now several stations working two meters FM (146.76 MHz) in Sitka, Alaska. We understand that Ketchikan, Alaska is also on the same frequency. KL7ETZ and KL7BCS monitor 146.76 MHz every day and anyone traveling the Alaska marine highway is invited to give them a call. AM activity in Sitka is on 146.40 MHz with about ten rigs currently on the air.

Dave Lewis KL7ETZ
Box 457
Sitka, Alaska 99835

you're
missing
some

top notch articles and great ideas

if
you
aren't
getting



the monthly
for
amateurs
that's
different!

To quote one of the many
reader comments so far —
*"you obviously have embarked
upon a fresh, new approach
to amateur radio."*

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12 months @ 5.00
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HAM RADIO magazine
GREENVILLE, N.H. 03048
Include address, call and
zip code.

QUIETING

SIGNALS

ARRL REPEATER COUNCIL

ARRL Southwestern Director John Griggs proposes inauguration of a national repeater committee made up of key repeater people across the country. The committee, says Griggs, would serve to keep the League up to date on this fast-moving VHF/UHF technology and would function as an interface between repeater owners and users and the ARRL decision-makers.

Though the ARRL has long been noted for its conservatism and sluggishness where radical departures from the staid amateur mores are concerned, Griggs predicts ready acceptance of the committee idea by League officials. The League is becoming increasingly democratic, says Griggs, and its policies are no longer dictated by a handful of local oldtimers on the east coast.

Griggs, who is currently running for reelection as Southwestern Division Director, has always been a front-runner in the fight for VHF repeater recognition. Though not a repeater user or FM'er himself, Griggs has recognized the increasing importance of these aspects of amateur radio in recent years. His liberal stands on internal League issues tend to make him at least an FM'er at heart.

The committee -- we'll be hearing more about it later -- is proposed to be made up of VHF'ers of varying repeater interests, including Los Angeles' Art Gentry, owner of the world-famous K6MYK AM repeater. Other prospective members are Ken Sessions, Bob Kelty, Gordon Pugh (K2GHR), Gil Boelke (W2EUP), Pat Devlin (K5BPS), and Don Chase (WØDKU).

Bob Kelty is Chairman of the California Amateur Relay Council and frequent

spokesman for "upstaters." Gordon Pugh is kingpin of the Manhasset/Fish-kill chain along the eastern seaboard; Gil Boelke is a key member of the Buffalo Repeater Association and one of the principals responsible for drafting the famous "Buffalo Petition." Pat Devlin and Don Chase are CD officials as well as founder/members of the Tulsa and Wichita repeater groups (respectively).

OPEN THREAT

A San Pedro amateur is apparently perturbed by FM'ers controlling remote facilities in the UHF spectrum. After reading an article in 73 Magazine by Ken Sessions ("So You Think You're on Frequency," Sept 1968), he writes:

San Pedro, Calif
9-21-68

Dear FM'er:

Read your article in 73 Magazine about AM'ers invading FM'ers' private territory at the upper end of the two-meter technician band.

Being a general class amateur not operating in this portion of the spectrum, I can say that I am not responsible for any of the FM'ers' problems; however, I feel that turnabout is fair play. FM stations below 440 MHz have been interfering with ATV stations in the L. A. area in recent months. My present TV transmitter is a 150 watt type and if the interference does not cease I intend to get up to the 500-watt level. So if you people stay above 440 MHz, I will stay away from any FM channel; if not, I might join RACES!

S. Miller
WA6BJV

FM REPEATER HANDBOOK

Editors and Engineers, Ltd, of New Augusta, Indiana announces that an "FM repeater handbook" is in the works. The handbook, being prepared by FM's editorial staff, will encompass all aspects of FM repeater planning, preparation, building, and operation. It is set for release early next year. Editors and Engineers, a subsidiary company of the Howard W. Sams corporation, is noted for such publications as William Orr's "Radio Handbook," Don Stoner's "Transistor Radio Handbook," Hooton's "Single Sideband: Theory and Practice," and many more. E&E prides itself on being "first in the field with the best."

SAROC

Gary Hendrickson (W3DTN), an officer of the Maryland Repeater Association, has announced that he will fly his private plane to the January FM Convention and SAROC funfest in Las Vegas. Accompanying him will be Bob Pederson (K2IEZ) of the East Coast VHF Society (one of the organizers of last May's highly successful Paramers FM Conference). FM Publisher Mike Van Den Branden and family will join the Paul Hudsons aboard a commercial airliner.

MOTOROLA IC's

Motorola's experimenter line of inexpensive integrated circuits is getting broader all the time. Paul Franson, one-time editor of 73 Magazine and now technical data head at Motorola Semiconductors in Phoenix, brought a sampling of the line to the ARRL Southwestern Division convention in Phoenix for display.

Motorola calls its experimenter IC's the "HEP" line, and all items are prefixed by the HEP designation. The units come individually packaged and cover a wide gamut of useful circuits. And they're low enough in cost to warrant serious consideration for repeater con-

trol applications. Paul Franson is something of an expert in semiconductor technology himself. He has written a number of articles on their use and is the author of 73's fast-selling Diode Circuits Handbook.

A number of application notes have been prepared as suggestions for using the HEP IC's. According to Franson, a catalog listing these application notes has recently been published. Copies are available to serious experimenters on a no-charge basis. Write Paul Franson, Motorola Semiconductor, Box 20924-FM, Phoenix, Arizona 85036 for more information.

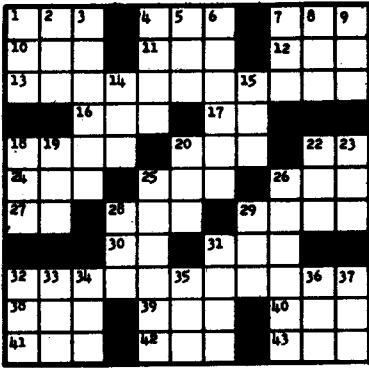
GUEST EDITOR

Much of the FM Magazine this month was edited by C. Nelson Carter (WB6KTF). Nelson is a full-time professional technical editor on the staff of one of Xerox' California subsidiary companies. FM's staff is grateful for his swift and competent efforts. Our typist, Marian Carlson, deserves praise, too, but she gets paid in hard cash. Nelson's assistance was a nonremunerative "love offering."

BARRY SWINGS

Former Senator Barry Goldwater informed FM Magazine that he is active on two FM. His operation of late is hampered by antenna problems as well as lack of time. He's actively campaigning to regain his senate seat in Washington. Arizona FM'ers speak particularly highly of Barry; he was directly responsible for the final o.k. given the Phoenix repeater placement. It seems all doors kept closing until Barry came along and opened a few.

CONVENTION 69
ARRL NATIONAL
DES MOINES, IOWA
JUNE 20, 21, 22
P.O. Box 1051, 50311



FM crossword

by K6MVH

- 29. Slight shock
- 30. Primary repeater command
- 31. K6MQB is one
- 32. Your FM unit might have come from this.
- 38. Perusing organ
- 39. Spheric vegetable
- 40. Silkworm
- 41. ---.
- 42. Laser type
- 43. Sales spokesman

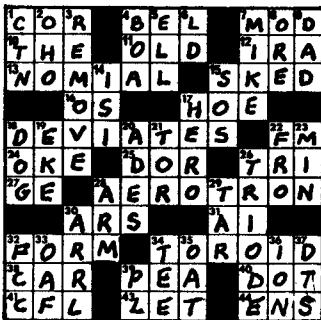
ACROSS

- 1. A kV or two to ground
- 4. Ham's "m'aidez"
- 7. Repeater relay
- 10. Legal number of kW for amateurs
- 11. Female sheep
- 12. Malt drink
- 13. Useful repeater ingredients (3 wds)
- 16. Shortest Morse character
- 17. The correct abbreviation for our hobby's most ancient form of modulation.
- 18. What RG-58/U will do with a kW of rf
- 20. Stewart (abbr)
- 22. Hamdom's intercom mode
- 24. To be (pl, all persons)
- 25. Signal to act
- 26. Country's largest freight carrier (abbr)
- 27. Rf final (abbr)
- 28. Transmitter blower

DOWN

- 1. Menagerie
- 2. Peak --- dip
- 3. Sell (door to door)
- 4. Chair
- 5. Have
- 6. Calm
- 7. Filter container
- 8. Prewar FM rig
- 9. Resonance (abbr)
- 14. Occupy a chair
- 15. Animal
- 18. Geographical schematic
- 19. What FM is heralding in
- 20. Its spots affect signals
- 22. High-impedance transistor
- 23. Miss West
- 25. Awning
- 26. Indispensable part of automatic phone patch
- 28. To
- 29. Constrictor
- 31. Loot
- 32. SSB'er's total output
- 33. Affirmative vote
- 34. Coax fitting
- 35. Meadow
- 36. Quartz source
- 37. An occasional drink

LAST MONTH'S PUZZLER:



FM Magazine
WANT ADS--Box 5203
Grosse Pointe, Mich. 48236

FOR SALE...30-50MHz RF deck for
Motorola Secsicon receiver. Vernon
Fitzpatrick, WA8OIK, McLain Park
M 203, Hancock, Mich. 49930

FOR SALE...Motorola 43GGV with
access. Motorola 41V Base on .94
and .34. Bud MacKenzie, VE3GKG
Box 743, Sault Ste. Marie, Ontario
Canada.

TRADE...Four 4X250B's in Brand
new, unused condition with one new
Johnson #124-110-1 4x250 socket and
three Johnson #124-111-1 ceramic
chimneys for a CDR-TR-44 Rotator
in good condition or a Motorola T44
line UHF transceiver. Will consider
other trades. Pat Clending, WA8
TDC, 421 Spink Court, Milan, Mich.

WANTED...Motorola crystal ovens.
12V, 4 pin, 80° C., Metal case. 4
needed. Gerard A. Baldauf, W3JKH
175 Wernersville Blvd., Werners-
ville, PA 19565.

FOR SALE...FMTRU 80D on .940
Senc. A. Recv'r with Preamp. \$100
Also GE AC utility on .94 30W just
\$85 John J. Enot, WA8OYG, 25659
Annapolis, Dearborn Heights, Mich.

FOR SALE...Budeman Radio Type
17A Frequency and Deviation meter
in excellent condition. \$75/offer.
Larry A. Smith, 1422 Inwood Ct.
Campbell, Calif. 95008

FOR SALE...GE low band Message
Mate presently operating on 52.980
MHz. In excellent condition with ni-
cad battery, tone decoders, GE desk
charger, leather case, manual. At
Just \$100 or best offer. Also have
a manual for a high band Message
Mate. James F. Clifton, M.D.,
1000 West Carson St., Torrance,
Calif. 90509

WANTED...CD group needs 80D high
band part; T1A- Buffer & 1st doubler
XFRMR. Anybody got? Civil De-
fense, WHQV, City Hall, Woonsock-
et, R.I. 02895

WANTED...2-meter transmitter strip
Vernon Fitzpatrick-WA8OIK, McLain
Park M 203, Hancock, MI 49930

REPEATER & REMOTE OWNERS!
Radio Technicians urgently needed.
Experience with commercial or FM
amateur repeaters. No commercial
license necessary but desirable.
Work involves setup and service of
mobile telephones, commercial re-
peaters, remote equipment, SALARY
OPEN. Los Angeles area. Call
Richard Summers...EXECUTIVE
COMMUNICATIONS (213) 985-1000

WANTED...Used Comco equipment
models 580, 582, 680 & 682. Must
be complete, and priced reasonably
Cohen---Fork Lane, Hicksville, NY
11801

WANTED...2M Linear- Johnson 6N2
Thunderbolt or Gonset 903A. K9TFJ
R #4, Box 275, Greenwood, IN 46142

WANTED...Bendix MRT-3B and MR-
77 manuals and or schematics. Will
buy manuals or photocopy and return
R.J. Walker, VE2YG, 6890 Field-
ing, Suite 605, Montreal 29, Canada

WANTED...Manual for Link FM units
1905A Receiver & 1906A Transmitter.
Ed Mattheis, WA8MWS, 4175 Pineport
Bridgeport, Mich. 48722

FOR SALE...RCA Hi Band CMV4
\$35; Link Freq. Meter \$35; Motorola
Hi Band 41V \$45, 2 M FM Walkie
Talkies, \$35. Higley, 1196 Elberon
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