

THIS ISSUE

MSO'S - DX NEWS

HITS & MISSES

BARTG RESULTS

PK-232 FIRST LOOK

ST-8000 REVIEW

CARTG CONTEST

AND MUCH MORE



**RTTY FORUM ARRL NATIONAL CONVENTION
SAN DEIGO**

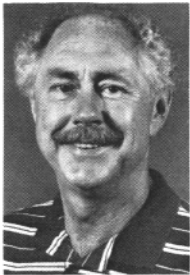


**RTTY SUITE - FAYE XYL of W6IWO - SID WB6FFW
DON WA7ICW - STAN KB6AKC**

<p>RTTY JOURNAL Dale S. Sinner, W6IWO OWNER - EDITOR - PUBLISHER ALL CORRESPONDENCE TO : 9085 La Casita Ave. Fountain Valley, Ca 92708 TELE: 714-847-5058</p>	<p>SUBSCRIPTION RATES</p> <table> <tr> <td>USA</td> <td>\$10.00 per yr.</td> </tr> <tr> <td>CANADA/MEXICO surf</td> <td>\$10.00 per yr.</td> </tr> <tr> <td>CANADA/MEXICO air</td> <td>\$12.00 per yr.</td> </tr> <tr> <td>FOREIGN surf</td> <td>\$10.00 per yr.</td> </tr> <tr> <td>FOREIGN air</td> <td>\$15.00 per yr.</td> </tr> </table> <p>All monies in U. S. currency only</p>	USA	\$10.00 per yr.	CANADA/MEXICO surf	\$10.00 per yr.	CANADA/MEXICO air	\$12.00 per yr.	FOREIGN surf	\$10.00 per yr.	FOREIGN air	\$15.00 per yr.
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FOREIGN surf	\$10.00 per yr.										
FOREIGN air	\$15.00 per yr.										

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HITS & MISSES

This month we welcome the addition of the subscribers to Computers & Amateur Radio (CARS) to our circle of RTTY friends. This fine publication has been produced by the Kantronics company which everyone is already familiar with. Recently Kantronics made the decision to concentrate their efforts on the design and marketing of their equipment. We are happy to assume the membership of the CARS publication and hope they will enjoy the RTTY JOURNAL. Kantronics will continue to publish articles and application notes from time to time and they will appear here in the pages of the RTTY JOURNAL. We at the Journal will strive to provide all our readers with the best material of a digital nature we can get our hands on. We invite you to share your ideas and designs with our readership. We'll do our best to give you space in the RTTY JOURNAL.

This month we have two fine technical articles to share with you. Both are

about new or relatively new products. Both have been submitted by experienced writers who know their subject well. I'm sure you will enjoy reading both of these fine articles.

Just returned from the ARRL National Convention in San Deigo, CA. The latest figures I heard on attendance was over 5000. It was wall to wall people on Saturday and on Sunday some were still buying at closing time which was noon. Most of the exhibitors were pleased with the turnout. There was an RTTY forum. Bill Henry, K9GWT of HAL Communications hosted this meeting and hopefully we will have some pictures from the meeting in this issue. Not sure about that due to space limitations this month. We also had a demodulator museum and showed some older tuning units. They were supplied by a number of amateurs from the Los Angeles area. I have some good pictures of the display. This may be the last time we will ever get a chance to see so many of these older units all assembled in one place.

Ben Grockett, KR6E informs me there is a group of Heath/Zenith, IBM users active on the autostart frequency of 14.082500. They are looking for more of you to join them. They can be raised by entering":time" and the usual Z suffixes. That's all for this month. de Dale,W6IWO

THE PACKRATT 232 -- A FIRST LOOK

by: Bill Snyder, W0LHS
1514 S. 12th St.
Fargo, ND 58103

The Packratt 232 by Advanced Electronics Applications was introduced at the 1986 Dayton Hamvention. When I saw the prototype I was quite impressed with its versatility. It had everything I wanted in one package: RTTY, AMTOR, Packet, Morse and a tuning unit that would work on high frequencies as well as VHF. At that time AEA President Mike Lamb, N7ML, indicated I might get a chance to beta test a pre-release model, so I jumped at the opportunity.

The PK-232 is designed to work with any computer that has an RS-232 serial output. It requires a 13 volt DC power supply which is not included with the unit. All necessary cables are supplied, but you have to furnish the plugs to match your transceivers. The hook-up takes only four wires to each rig.

RTTY is my first love, so when the test unit arrived I naturally put it on RTTY after I had a quick look at its Packet capabilities. I compared it to my ROBOT 800HC on a side-by-side basis. On extremely weak signals they were about equal. The Packratt would copy better in some cases, while the Robot would be more correct in others. But these differences were only on a few letters here and there. I was anxious to compare tuning characteristics because the Packratt uses a 200 Hertz shift while the Robot is built to the 170 Hz shift standard. I thought this might make a big difference, but I was pleasantly surprised to find it did not. The 200 Hz shift is standard for packet radio on HF.

The Packratt has switchable outputs for two radios, mark and space lines for scope tuning indication, and your choice of AFSK or FSK for transmitter keying. Both polarities are provided for CW and FSK keying so it should match any rig you choose to hook it up to. The LED tuning indicator is very easy to use if you don't have an oscilloscope. I still prefer the scope, but before I bothered to hook the scope to the Packratt I got along very nicely with the LED bar.

I have been using a TAPR TNC-2 and an AEA PM-1 on high frequency packet. The PM-1 has the same kind of tuning indication as the PK-232 so I was well

acquainted with using it. Nevertheless I like the crossed banana picture on the oscilloscope screen for speedy tuning.

When I received the beta test unit (serial 14) the manual had not been completed, so Mike Forsythe of AEA, sent along a photocopy of the command chapter plus a sketch of how to hook it all up. After I had been using it for about three weeks the production instruction book arrived, along with a new PROM to be inserted into the unit. The PROM was to fix a couple of bugs that were known to exist in the first model. The new book, nearly 260 pages, covers everything I wanted to know about the unit except for information on the battery back-up system. I assume that will be included in future editions.

The manual is a hundred times better than the book that came with my PK-1 two years ago. It is well-written and the contents are organized in a workman-like way. The Neophyte should have no trouble in getting on the air with the PK-232. The manual will walk you through it with no sweat whatever. It will take some studying, but you'll get the hang of packet operations as well as the other modes. The command list, which occupies three pages, lists the default values, the mnemonics, and a brief description of the function. I found this list very helpful, because many of the commands are not the same as those for the TAPR TNC units.

If you are a newcomer to AMTOR/RTTY the book will explain all the operations in full detail. An appendix outlines a bit of history about data transmission and there is a good bibliography of articles and books about the subject. One thoughtful thing that I really like is the "This page deliberately left blank" notation on all blank pages. I recently had to get a new manual from TenTec because of finding blank pages in the Titan instruction manual. I wasn't sure they were supposed to be blank or not.

So, if you're afraid to jump into PACKET/RTTY/AMTOR because of the learning process required, here is a piece of gear that will make it easy for you. I'm a nut about good instruction books. I guess it's because I've struggled with so many poor ones during my 53 years of ham radio experience. PK-232 cont. pg. 4)

(PK-232 cont.)

AEA has set a new standard with the PK-232 book.

I hooked the Packratt up to my Sanyo 885 (an IBM clone). The Sanyo has two disk drives, a 20 meg hard drive and 640K of RAM. Don't let this scare you away from trying a unit like the Packratt. All it requires is a computer capable of putting RS-232 signals to and from the unit. I use my Sanyo for a 15,000 name mailing list which I keep for my high school alumni association and for many other things including ham radio. Its 8MHZ clock makes it zip right along. Because I had the PM-1 wired to the Kenwood 940 and the Yeasu 726R I merely had to change plugs. In minutes I was on the air.

On AMTOR I worked I5GJK and VK3JW for starters. I have not been on AMTOR for about a year, so it was fun to renew acquaintances with old friends. One surprise on the AMTOR eavesdropping mode, and FEC mode copying as well, is the computer inserts a dash if it does not copy a letter correctly. I tried copying the ARRL bulletins from W2QFR one Saturday. I set the Packratt for FEC mode, turned the printer on and left the shack. When I came back there were all the bulletins perfectly printed waiting to be taken from the machine. If you try this with RTTY you'll have a ton of paper on the floor unless you have an autostart feature in your RTTY computer. ARRL sends the bulletins in the FEC mode now and then if they have time. I wish they would drop the ASCII transmission and put the FEC on all the time.

The Morse mode is far better than that in the ROBOT, however you can't beat the human brain for copying Morse code. If the code is machine sent the PK-232 will do a rather good job of laying down the dits and dahs. I did not try transmitting any keyboard code during the early days of the test.

I tried different communications programs with the Packratt. I used QMODEM, and YAPP (Yet Another Packet Program) by Jeff Jacobsen, WA7MBL. Both of these popular shareware programs worked fine, so I would assume most any modem program will work with the Packratt.

On packet the unit really shines. The monitor command gives you six

different monitor options. It is very easy to switch from VHF to HF radios. All you need to do is punch one panel switch to change radios, then type two software commands to change the shift and the baud rate. The front panel LED's (21 of them) keep you posted as to what is going on in the middle of the machine.

All in all the PK-232 is a good product and the manual will take much of the pain out of the newcomer's learning process. Would I recommend it? Yes. I haven't had a chance to test any other makes, but I like the AEA unit so well I'm buying it. de: Bill, W0LHS

BARTG CONTEST RESULTS (cont.)

SWL OPERATOR

NO	CALL	POINTS
1	ONL-2500	372,198
2	OH1-100	326,158
3	ON1383	289,144
4	DE1GMH	140,616
5	BRS28198	74,354
6	G6LAU	72,124
7	F11ADB	71,016
8	G8CDW	70,824
9	Y2-1928/I64	62,300
10	ONL4003	44,220
11	EA7-44-0668	43,710
12	DL F20 1731652	32,724
13	ONL620	14,976
14	Y2-2646/F56	3,630
15	Y2-2702/F49	2,940

CHECK LOGS

The Contest Manager gratefully acknowledges check logs from the following stations: SP2UUU, SM4CJY, SM6APS, KL7VZ, and ED1CI.

APOLOGY

Last month the Journal had lots of pictures from the Dayton Hamvention. Since it was my first trip to Dayton I did not know many people. The hams who were there were very nice and introduced many others me, but unfortunately my memory is pretty short and I did not remember all the names. So because of this I was unable to provide names with all the faces in the pictures. I promise to do better next year. ED:

Or This Inexpensive It Really Shouldn't Be This Easy

Remember just a few years ago, how it took a roomful of equipment just to work RTTY. And if you wanted more than one mode it took a dedicated computer system costing thousands of dollars. The new AEA Pakratts are proving it doesn't take lots of equipment or money to enjoy working all bands in five different modes.

First, A Good Idea

The idea behind the Pakratt is very simple. One controller that does Morse, Baudot, ASCII, AMTOR, and Packet, and works both HF and VHF bands. Of course the decoding, protocol, and signal processing software must be included in the unit, and connection to the computer and transceiver have to be easy. The unit also has to be small and require only 12 volts, so it will work both in the shack and on the road.

Second, Computer Compatible

It doesn't matter what kind of computer you have, we have a Pakratt for you. The PK-64 works with the popular Commodore 64 or 128, and the PK-232 works with any other computer or terminal that has an RS-232 serial port. The PK-64 doesn't require any additional programs. Simply connect to the computer and transceiver and you're on the air. The PK-232 needs a terminal or modem program for your computer. The one you're using with your telephone modem will work just fine.

Fourth, AEA Quality and Price

Not many manufacturers like to discuss quality and price at the same time. AEA thinks you want high quality and low price in any product you buy, so that's what you get with the Pakratts. Ask any friend who owns AEA gear about our quality. The people who buy our products are our best salespeople. As for price, the PK-64 costs \$219.95, or \$319.95 with the HF option. The PK-64A, an enhanced software unit with a longer flexible computer cable, costs \$269.95 or \$369.95 with the HF option. The PK-232 costs \$319.95 with the HF modem included. All prices are Amateur Net and available from your favorite amateur radio dealer. For more information contact your local dealer or AEA.

Prices and specifications subject to change without notice or obligation.

PAKRATT™ Model PK-64



PAKRATT™ Model PK-232

Third, Performance and Features

The real measure of any data controller is what kind of on-air performance it gives. While the PK-64 and PK-232 use different types of modems, both give excellent performance on VHF. The optional HF modem of the PK-64 uses independent four-pole Chebyshev filters for both Mark and Space tones, and A.M. detection. The HF option can be factory or field installed.

The PK-232 uses an eight-pole bandpass filter followed by a limiter discriminator with automatic threshold correction. The internal modem automatically selects the filter parameters, CW Fc = 800 Hz, BW = 200 Hz; HF Fc = 2210 Hz, BW = 450 Hz; VHF Fc = 1700 Hz, BW = 2600 Hz.

The PK-64 uses on screen indicators to show status, mode, and DCD (Data Carrier Detect) while the PK-232 uses front panel indicators. Both units use discriminator style tuning for HF operation. And that's just the tip of the iceberg. Features like multiple connects on packet, hardware HDLC, CW speed tracking, and other standard AEA software features are included in both the PK-64 and PK-232.

THE CANADIAN AMATEUR RADIO TELETYPE GROUP VE3RTT

26th ANNUAL RTTY DX SWEEPSTAKES

RULES:

TEST PERIOD: Saturday October 18th 1986 - 0200 GMT
to Monday October 20th - 0200 GMT

Not more than 30 hours of operating time is permitted for single operator stations. Non-operating periods can be taken at any time during the contest. Multi-operator stations may count the entire 48 hour contest period. Summary of operating times must be submitted with each score.

BANDS: Use all Amateur Bands 3.5, 7, 14, 21, and 28 Mhz.

CLASSIFICATIONS:

- (a) Single Operator (one transmitter)
- (b) Multi- Operator (one transmitter)
- (c) S. W. L. Printer

MESSAGES: To consist of RST, Time GMT and Zone.

EXCHANGE POINTS: All two-way RTTY QSO's with one's own Zone counts two (2) points. All other contacts will receive points as listed on CARTG Zone chart.

Multipliers: Country status as ARRL Countries List, K17, KH6, USA, VE/VO/VY/VX, VK Districts counted as separate countries. Stations not to be counted more than once on any one band. Additional contacts counted on different bands. One's own country counted as a multiplier.

SCORING: Total Exchange Points X number of countries contacted X number of Continents (maximum 6). Two Hundred (200) Bonus Points added to final score for each Canadian contact on all bands.

LOGS: Logs to contain Band, Date, Times GMT, RST, Call signs, exchanges sent and received.
Use separate Log Sheet for each band.
Multi-Operator Logs must be signed by each operator
Send SASE or IRC's to CARTG for Log Sheets.
Logs must be received before January 1st 1987 with Time Summary claimed Score.

MAIL TO: Canadian Amateur Radio Teletype Group, 85 Fifeshire Road,
Willowdale, Ontario, Canada M2L 2G9 VE3RTT

CONTEST AWARDS

ALL AWARDS will be plaques with winners name and call-sign engraved on it.

The Top Ten Scores will receive plaques sponsored by the "RTTY JOURNAL" and "C. A. R. T. G."

The High Score in the Multi-Operator classification and the S. W. L. printer will receive plaques sponsored by the C. A. R. T. G.

The Canadian Top Score plaque given by "President CRRL Award"

The station that contacts the most Canadian call-signs on all bands will receive plaque sponsored by VE3JR

The "Green RTTYer's Plaque" for high score of contestant never taking part in RTTY contest before, is the Sidney Burnett Memorial plaque

BRITISH AMATEUR RADIO TELEPRINTER GROUP
1986 SPRING CONTEST RESULTS

SINGLE OPERATOR

NO	CALL	POINTS	NO	CALL	POINTS
1	9HIEL	851,922	38	OH-1-TD	50,904
2	ON4UN	767,480	39	W3AOH	49,856
3	KT1N	494,340	40	ZL2AKI	49,352
4	I2OLW	451,008	41	VK2EG	39,960
5	G3HJC	303,870	42	I8KFR	39,520
6	G4SKA	293,344	43	G4MKO	39,096
7	UT5RP	277,970	44	G8VF	37,950
8	HC5KA	277,500	45	SM7BGE	36,000
9	OK2FD	245,784	46	G4CJJ	34,844
10	WB5HBR	207,432	47	K8CV	32,550
11	WB1AEL	203,814	48	DL2BBX	31,920
12	SM5FUG	171,234	49	GW3EHN	31,150
13	W0WP	161,160	50	VK2SG	30,576
14	NC2V	155,520	51	DF5BX	30,070
15	K6KZ	128,448	52	GI4TSK	29,946
16	VE7YB	119,700	53	G0BRY	26,660
17	Y79XN	118,470	54	PY6ACP	25,696
18	OZ1CRL	109,922	55	SM0KV	25,576
19	OH2BP	102,577	56	PA3DBS	23,772
20	KB2VO	99,900	57	SK6NP	23,192
21	G0AZT	99,552	58	SM7ABL	22,800
22	SP9HWN	98,496	59	HP1AC	20,860
23	VE1TE	97,244	60	OZ4DZ	20,460
24	I2WEG	92,340	61	EA1BFZ	19,440
25	VK5RY	86,264	62	GM4VDI	17,040
26	VE6ZX	85,260	63	Y22HA	16,236
27	W6JOX	82,236	64	N0FMR	14,350
28	Y25DL	69,790	65	KL7PG	13,882
29	IV3UT	69,408	66	W0LHS	13,500
30	A22BW	68,800	67	DL4YBP	12,800
31	SP9BCH	65,056	68	JA1AYC	10,200
32	WA6WGL	63,210	69	LA1XDA	8,337
33	WB5EUC	62,092	70	LA7AJ	8,125
34	Y22UL	56,862	71	VK2BQS	7,360
35	JF4GJB	56,848	72	G4PWT	7,200
36	Y58VA	56,316	73	LA9WO	7,020
37	OZ1IWE	55,152	74	SP9BGS	3,630
			75	WA3JXW	3,100

MULTI OPERATOR

1	LZ1KDP	612,008	7	WA7EGA	193,680
2	LZ2KIM	514,382	8	OK3KII	150,220
3	GU3HFN	285,600	9	OK3KGI	114,750
4	G3UUP	251,856	10	Y44ZK	74,410
5	OH1AF	242,850	11	G0CWC/A	29,500
6	OK3RJB	201,144	12	UZ0LWW	15,590
			13	HB9BQU	11,760



Dick Uhrmacher
K0VKH
212 48th St.
Rapid City, SD
57702

MSO'S

Hi Gang ! I hope all of the summer activities have been good for you, and that you've defied tradition and fixed all those antenna problems we usually end up working on in the dead of winter ! It's lightning season again, and it's important to do your best to preclude any untimely visits by Mr. Lightning Bolt !

I had a nice letter from Bill, K4YZU Louisville, Ky. informing me that he's now parking his MSO on the "International Mailbox Frequency", (Carrier frequency is 14.097.500 Hz). Bill's system is the Crown Mailbox software, and his access code is: YZUZW. Ring up Bill's MSO and give it a work-out !

1987 Dayton HAMVENTION: What?? Dayton time already? Not really, but with the somewhat limited accommodations in the Dayton area, it's pays to do your planning a bit early. If you are thinking about a visit to the world's greatest hamfest, it's certainly not too early to be thinking about accommodations. The HAMVENTION is always held the last FULL weekend in the month of April. The 1987 "RTTY Dinner" is being sponsored by Jerry, WA1IUF, Head Mogol, and Imperious Leader of the infamous Oh-Wha-Tah Society, and is tentatively scheduled to be held at the Imperial House North Motel in Dayton, an event you will not want to miss!

Complaint Department: I received a very nice letter from a mid- Western Amateur Radio Station recently, lamenting about his recent efforts to establish a MSO system on 14.100 KHz. It seems that he was chastised about parking on that particular frequency, and for utilizing his "beacon" feature to announce his presence. His question to me was, "If I can't utilize 14.100 KHz, just where on 20 Meters should I park my MSO"?

His choice of 14.100 KHz was an

unfortunate one, primarily from the viewpoint of the already established world-wide "Propagation Beacons" on that frequency. However, it appears to this author that some of the blame must be shared by those who sponsor those beacons as well, in that their placement on the upper border of the long established, and ARRL sponsored, "Gentleman's Agreement", (14.080 to 14.100 KHz), is bound to place the beacons in some jeopardy. Please don't misinterpret my remarks, as I think the propagation beacons serve a well defined purpose. It's just that I feel there is a decided lack of coordination on placement of remotely utilized/activated services on 20 Meters, and probably just as important, an obvious lack of publicity surrounding this placement, and their continued utilization. It's easy to understand how 14.100 KHz appeared to be a "nice spot" to park an MSO, when you consider the lack of publicity concerning the propagation beacons.

Those of you who have followed the "MSO Column" know that I have beat the drums for expansion of RTTY operations on 20 Meters for some time now. The ARRL sponsored "Gentleman's Agreement" has worked well over the past 15 years or so, but with the obvious increased interest in digital communications, and large influx of new operators and systems on 20 Meters, it is now time for re-evaluation of use of this band, and I personally feel it's another "use it, or lose it" proposition.

With respect to digital communications, the spectrum between 14.109 and 14.125 KHz is really a "no mans land", and we can either continue to step on each others toes with our crowded operations between 14.075 and 14.109 KHz, (and anticipate another downward expansion of the Phone- SSB- segment), or we can encourage digital operations above 14.109 KHz, providing for some breathing room for all concerned. The apparent increasing popularity of HF Packet Radio in the 14.103 to 14.107 KHz area further demonstrates the need for consideration, and for expanded utilization of 20 Meters.

So, if you're thinking of starting an automated system, look at 14.109 KHz and above. Rag-chew on the frequency for a while, and above all LISTEN until you're sure that your system isn't parked on top of some well established activity.

(MSO's cont.) Read and understand the Rules concerning "automatic" (or unattended, if you prefer), operations, and beacon activities. You can well understand how terribly frustrating it is when your beacon signal interferes with a rare DX QSO, or any other use of that frequency. I feel strongly that beacons should NEVER be utilized unless the SYSOP continuously monitors to insure that they do not interfere with already established communications. Additionally, if you really don't have the "pioneer spirit", consider joining one of the already established MSO/CBMS/AMTOR Packet activities. All of the groups I'm familiar with are quite friendly, and would enjoy having you on board!

I take this opportunity to volunteer to keep a current list of systems and activities on 20 Meters, (relative to digital communications), to assist in establishing some basic planning in that area of the spectrum. It can only be successful if system operators take the time to report their activities, including such basic information such as: hours of operation; function of systems; access requirements and frequency. (The frequency should be reported carefully, and with respect to placement of the "CW carrier"). This information will be maintained in my MSO on the National Autostart Frequency, (Carrier is 14.087 750 KHz), available during the day from 0730 to 1630 MDT, and will be reproduced periodically in the MSO Column of the RTTY Journal. (See heading "20 Meter Utilization" pg.)

Finally, it's not enough to sit back and agree or disagree with this or that plan for frequency utilization. If you are interested enough to have an opinion, then you should speak out. There are those working behind the scenes with various plans and schemes for utilization of all Amateur Radio frequencies, and many times these persons do not have our best interests at heart. Additionally, many times they lack diversity of opinion, and unless we provide an active input, they go forward with less than desirable recommendations. Write a letter or article for QST, 73, CQ, or Ham Radio magazines, let your ARRL Section Manager know your feelings, and don't neglect informing the ARRL. Whether

you approve of the ARRL or not, they speak for Amateur Radio where it counts, and they want your input !

MSO RAMBLINGS: Don Keifer, W5QXK, has returned his MSO to service in the Dallas area. Don reports that he's using a temporary antenna at his new home QTH, (Kaufman, TX), and his system will be active from about 1000 to 1900 CDT daily, on the National Autostart Frequency.---- Need a copy of the ARRL Bulletins? They can be found in the WB8ICL and W5QXK MSO's. --- Need technical information relative to RTTY, current equipment for use on RTTY? See the "Library" in the K0VKH MSO. --- With the increased interest and use of IBM PC's, (and compatibles), on RTTY, Clark, W9CD, is developing a "MSO Program" for use with this type equipment. Preliminary testing demonstrates that Clark is an excellent programmer ! --- John, TG9VT, reports that he will be up and running on AMTOR in the near future.

That's it for this month Gang ! Have a nice Summer, and enjoy RTTY and the MSO's ! 73 de: Dick, K0VKH

20 METER UTILIZATION

This is a first edition of the known digital activity, by frequency on 20 meters. Since it is the first listing, there may be some errors or inaccuracies. It will be updated from time to time as the information is forwarded to K0VKH. This can be done either direct or through the RTTY JOURNAL. Please help to keep this listing current. Thank you.

14.067.750.

National A/S Freq. (MSO/MAILBOX)

14.090.000.

RTTY PIX Freq. (Pictures)

14.097.500.

International M/B Freq. (MSO/MB)

14.100.000.

World-wide Prob. Beacon Freq.

FREQUENCIES ARE CARRIER FREQ's

Roy Gould, KT1N
P O BOX DX
Stow, MA. 01775

DX - NEWS

Hello fellow RTTY DXers, I hope the summer has been a good one for all of you and the fall and winter bring us better DX conditions on the bands. I have not been on very much at all, what with vacation camping in Vermont (sorry xyl said, no radio gear) and putting in a pool the days just ran out of time. I am now back to almost normal and should be heard on the bands more often. The cards and letters also dropped off as I imagine everyone else was doing the same thing. So this months column is a bit on the thin side, but will be fat again next month I'm sure.

HC8 GALAPAGOS

Ted, HC5KA and a group of other HC hams will be on from HC8 October 4 to the 11th. They will be very active on RTTY. Ted has 2 C64s and Disk Drives and also Packet gear he will take with him, so look for some Packet activity also. I had planned to be with Ted but just cannot make it this year, maybe another time, "Boy" it sure sounds like fun. It has not been decided at this writing how the QSL cards for this DXPEDITION will be handled. It might be through me or to one of the HC gang, so watch the bulletins or follow the info given by the operators.

HC1MD also was recently on the Galapagos and made about 500 RTTY QSO's. QSL this activity via Rick's home call NE8Z, box 62, Rochester, Mn 48063.

NEW ENGLAND ARRL CONVENTION OCT 18,19

I will be at this convention for the duration. It is held in Boxboro, MA just up the road from my house and I also serve on the Planning Committee for it. The program is not final yet, but hopefully there will be a RTTY and Packet forum. If any of you are planning to attend, drop me a note and lets get together. Lots of exhibits and a good flea market.

MAILBAG

Not much in the old mailbag, did get a

nice letter from Joe IOAOF and will let you read it with me as he is our featured RTTY DXER of the month. Also got a note that a couple of people were trying to call me on the phone and could not find my number! So that won't happen again it is AREA CODE (617) 897-8009. If you can't find me on the air give a call. Bill, W0LHS did just that, he had not heard me for awhile and was wondering if I fell into the pool or something, we had a nice chat and swapped a few DX stories. Thanks Bill.

DX UPDATE

S. M. O. M. 1A0KM, ... Joe, IOAOF came on July 20. He managed to work 290 stations from the S. M. O. M. on RTTY as others also were on with SSB and CW. QSL the RTTY only contacts to Joe, IOAOF. His address is as follows: Giuseppe Loreti, via Lucilio 11, 00136, Rome, Italy. Please include IRC's or appropriate postage and S. A. S. E.

Thailand HS0C... This station was heard by me on July 26 very weak and working Europeans, I chased him for 2 hours and gave up, I never heard him again but I know Joe, IOAOF and others worked him. This was the DXPEDITION by JA8RUZ Rare Zone 26 on RTTY... QSL via JA8ATG. Toshi was supposed to be on RTTY from 9N1MM, I had reports that he was on, did anyone work him from there?

Pagula 3COA... Well another I missed due to not being around... oh well .. many did work it with some massive pileups as the station operated transceive on RTTY. Please when you are talking to someone who is either going on or is on a DXPEDITION to a rare spot, ask them to operate split as they would on other modes. Why people think they have to operate transceive on RTTY is beyond me. One day F6EWN was taking a list on RTTY for the next day for the 3CO, I don't know how that came out as I was not around the next day. What a mess the pileups were I am told. If you were lucky to get through QSL this one via TR0AT, BOX 1826, Liberville, Gabon.

RTTY DXCC

Congratulations to these new members... W0WP, W7KS, WA4WIP, W0RRC, I1IQJ, and CE3BBW.

(Roy's DX News cont. next pg.)

(DX News cont.)

RTTY JOURNAL AWARDS

Dale should have the records in his hands soon for the awards offered by the Journal. Please send all requests and updates to Dale for these awards.

RTTY DXER OF THE MONTH

Please send me a write-up of yourself, you know, how I got into RTTY and Ham radio, DXing or whatever and include a photo of yourself and station. This month we hear from our good friend Joe, IOAOF.

Giuseppe Loeti, IOAOF

Joe, as he is known around the world writes,

" I am very glad to help you Roy and all my friends in the U. S. A. with their RTTY DXCC with my recent S. M. O. M RTTY operation. Unfortunately conditions were not that good and my operating conditions were also not so good. A vertical antenna and a FT-901 with NO filters. Fortunately, my personal keyboard a TONO 500E worked very well. I use the TONO for all my portable operation and in my shack I use a HAL DS-3100ASR, a Dovetron MPC-1000R, a Drake C line and a Mosley CL-33 same as when I started RTTY in 1975, that little but fantastic world of the green keys.

I have worked 210 DXCC countries, and recently added VP8AQT, AZ1A, FO0XX, ZD8KM and HS0C Zone 26!! i have received from ARRL RTTY DXCC NO. 24, RTTY WAS NO. 42 and I am very proud to say that in 1983 I received from CQ Magazine my RTTY/ USA-CA Award with a letter from the custodian saying "the first station ever to have the award endorsed all RTTY" and still the only one, hi hi.

In regard to 1A0KM, the gang called me for the RTTY operations on Saturday July 19 when they got the OK to operate. I did put the word out on 20 meter RTTY starting at 1800 UTC. My friends worked SSB and CW Saturday night and RTTY started on Sunday at 0500 UTC. Next time I plan to have a better antenna. Unfortunately, the gang works sporadically from there, and there are no plans at the moment for another DXPEDITION to S. M. O. M.

I am also QSL manager for HV2VO, the Vatican station at the Observatory. Father Edmund is at the moment QRT due to

antenna problems. We hope soon back on the air.

My personal job is in a factory that produces sugar coated almonds that my Great, Great, Grandfather began in Rome in 1852!! My father, Gioacchino, who has been a silent key for many years was also a Ham since 1920. In my shack I have a 1928 Callbook with his name in it and his call which was at that time EI1GL.

I am 59 years old and a widower as my wife Luisa passed away in 1981. I also have a son Roberto who is 22 years old. My station is located on top of a hill called Montmario near the Cavaliere Hilton Hotel. 450 feet high and the Eternal City below me.

This is my story Roy, please tell all my friends who read the RTTY Journal my 73 and to all my friends in the U. S. A. to send me their QSL card for my USA-CA County Award."

Well Joe, I guess you just told them yourself. Joe also sent along a nice Map of Rome showing his home and factory. Thank you for the nice letter Joe.

BARTG RTTY CONTEST

Elsewhere in this issue are the results of the March BARTG. Yours truly came in 3rd in the world with John, ON4UN 2nd and Jeff 9H1EL in first place. Boy, John nearly caught old Jeff but Jeff had a nice opening on 15 that made the difference. A lot of familiar calls in the results and this is a great contest to pick up a few new ones. Congratulations to all.

Well that is about it for this month, should have a lot more DX info to report next time as we all return to the shacks. Please let me know what you're doing, drop me a note or if you hear me on say HI. Tell your friends about the Journal. Good DX and a tip of the DX HAT to the DX Bulletin, WIDA, W0LHS, N1DGC, AG0N, WB5HBR, W5HEZ, WB1AEL, TG9VT, W2JGR, WA4WIP, and Joe, IOAOF.

ED: Due to lack of space in this months issue it was necessary to continue the last part of the ST-8000 article next month. Also, I had promised the C-64 article this month and I am holding it over for next month. I'm sorry that these articles didn't fit in this issue. Will have ARRL convention pix in next issue also.

HAL ST-8000 HF MODEM

by: Ben Grokett, KR6E
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Hollywood, CA.
90029

During the years that I have been active on RTTY, my primary interest with the mode has been with weak signal reception. Many of you probably remember some of the outstanding terminal units that have been developed over the last 20 years. One of the first really good terminal units was the TTL/1 and followed by the TTL/2. Both of these utilized tubes in their design and they had the type of features that are important for successful HF RTTY communication. Soon after the TTL series became popular with serious RTTY'ers, integrated circuits were starting to show up at prices the average hobbyist could afford. Thanks much to the efforts of Irv Hoff, W6FFC and others, the first solid state terminal units with advanced features became available to amateurs. Such units as the ST-5 and the ST-6 used integrated circuitry to achieve good signal handling characteristics and excellent autostart response. Virtually all terminal units up to the time of the ST-6 used passive filters. Extensive filtering for optimum design was often lacking due to packaging and cost considerations. However, it wasn't long before demodulators designed for commercial and government use were designed with active filtering schemes in order to obtain maximum performance at moderate cost. There were other excellent demodulators around at this time that were designed for the commercial or government market. The Fredericks 1200A, and 1273 are outstanding examples of high quality design utilizing active filters. For the average amateur however, the price of these commercial units put them beyond practical range unless they could be obtained as a rare surplus treasure. HAL Communications of Urbana, Illinois was probably the first company to produce a low cost high performance terminal unit using active filters in their design of the ST-6000. One big problem with most of these early efforts using active filters in their design is that they still represented a compromise with regard to timing factors and bandwidth considerations. Some companies attempted to get around this problem with optional filter modules that were optimized by designing the modules for

specific baud rates, bandwidths, and tone pairs. This approach proved to be both cumbersome and expensive because each time a change of baud rate or tone pair was desired an entirely different demodulator would have to be configured in order to maintain optimum reception. An answer to this problem was found by combining microprocessor control with tunable switched capacitor filters. Switched capacitor filters offered several advantages over previously used designs such as ease of change of filter parameters, fairly linear filter Q, good selectivity, and an excellent cost performance ratio. The idea of utilizing intelligent filters is not new. Frederick Electronics applied this concept in demodulator filter design as early as 1969 in their commercial and government units. The cost of these units was far out of reach for even the most enthusiastic RTTY'ers and it wasn't till about two or three years ago that deluxe terminal units became easily obtainable by radio amateurs.

The HAL ST-8000 is a full-featured modem designed to demodulate the most common type of shift-keyed and on-off keyed data typically found at HF frequencies. The features of such a unit are many and varied and because of length limitations I will not attempt to cover each feature in this review. However, I will mention those features which make the ST-8000 stand out against the competition in its performance class.

Since I have always been interested in weak signal RTTY reception, the dynamic range of a demodulator is of critical importance for success. The ST-8000 has an outstanding dynamic range from -70 dBm to +20 dBm. After using several other commercial grade demodulators I have been disappointed by their relatively high noise floors. This is not the case with the ST-8000. Because of careful design considerations, the ST-8000 does indeed have an outstanding dynamic range that allows tracking and holding signals long after they have become inaudible to the human operator. This was particularly apparent to me the very first time I used an ST-8000 and was able to get solid copy and QSO with a very weak Falkland Island station even though there was moderate QRM, with general and selective deep fades on the signal. (ST-8000 cont. next pg.)

(ST-8000 cont.)

The reason I was able to do this was no accident or luck but through careful deliberate design of the demodulator. All filtering in the ST-8000 is under automatic control of the central processor. Therefore, when a specific shift and baud rate is selected by the operator, all timing and bandwidth requirements are optimized automatically. Most of the amateur "copy everything" demodulators ignore timing considerations for the most part and as a result suffer terribly in weak signal reception. Also, the ST-8000 allows the operator to switch instantly from AM to FM detection or variations of the two. Since AM generally gives superior adjacent channel performance and is less susceptible to signal capture it is the preferred method of detection under most weak signal conditions. The ST-8000 has a patented method of multipath correction that provides superior detection under fading conditions. It has been my experience that many of the so-called error correcting schemes used by other manufacturers fail to work properly under most conditions. After extensive on the air tests I can say that this is not the case with the ST-8000 and the unit continues to copy a wide variety of fading signal types when other demodulators are unable to follow the signal.

The tuning of the ST-8000 is all controlled from the front panel it is strikingly similar to the tuning of a modern HF receiver. All tuning is in 1 Hz increments and the main tuning control on the unit sets mark and space for both transmit and receive, and the baud rate selection. Once a desired frequency or baud rate is displayed on the front panel it can be locked into memory. Using this method it is possible to set up to eight separate receiving conditions for instant access by the operator when required. The memories are non-volatile and each of these eight stations is capable of storing input/output mark, space, shift, center frequencies, and input/output baud rates.

One of the most important considerations in any demodulator is the type of display it allows. I have always been partial to scope displays taken off the channel filters because they show signal displacement, frequency, and direction. In the ST-8000 one can find

the typical scope display of mark and space channels but an important new addition has been added to this demodulator by HAL called "Spectra-Tune" which allows the relative position of the incoming signals in the audio spectrum to be displayed horizontally across the bottom of the display tube. This is an interesting feature because under certain receive conditions it allows an operator to see adjacent channel signals and the whole process of tuning complex multishift signals is greatly simplified. I found this feature to be particularly useful when tuning in the wider shifts found in commercial signals and when using an ST-8000 as a front end for a Heath HD-4040 TNC when receiving packet on HF.

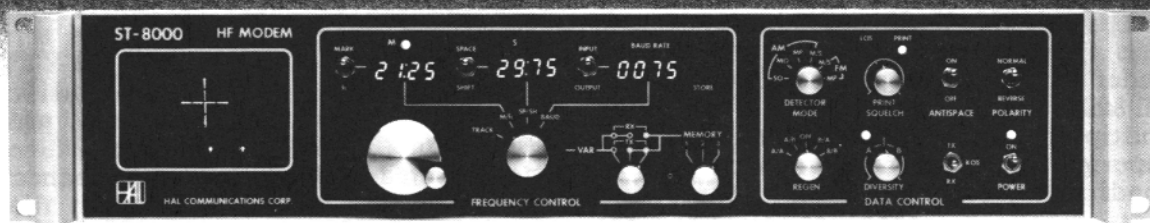
Another interesting feature found with the ST-8000 is the ease in which two-channel diversity can be incorporated. There is a DB-9 connector on the back of the ST-8000 which allows two units to be used in diversity operation. By jumpering these connectors diversity is achieved with a pair of ST-8000's and with HAL's special "infinite resolution diversity tuning" it is possible to control system channel gain for optimum performance. This is particularly valuable when the radio receivers or antennas may exhibit different gain characteristics and signal balancing at the demodulator/detector level is required. By experimenting with the balance control between the A and B channels it is possible to attain excellent diversity performance from the ST-8000.

Of course, the ST-8000 has full regeneration and code conversion capability. There are five code conversion settings available from the front panel (including off) and these are called A/A, A/B, OFF, B/A, and B/B respectively. Regeneration is useful for those of us who still use mechanical printers for hard copy.

There is provision in the ST-8000 for printer control and there is a delayed control line for motor control provided at the back of the unit. The motor control relay is not provided in the ST-8000 and it is up to the operator to utilize the control signals from the ST-8000 to best advantage. The autostart response is that typically found in most AM detector type units. (ST-8000 cont. next mo.)

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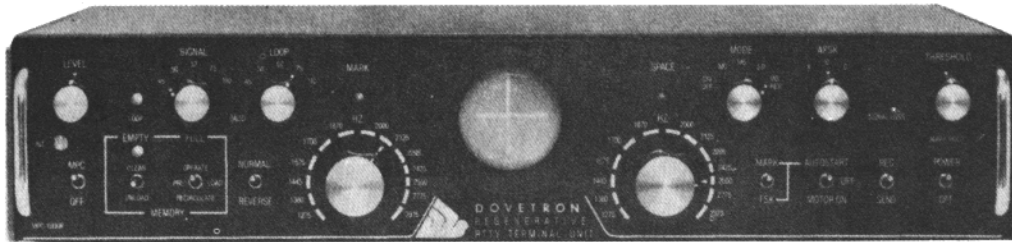
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