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Nick Smith, W4GKM, writes about his trip to Honduras on page 10.

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The New **RTTY** Journal.

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Staff



Once again it's time to be heading to the annual gathering at Dayton, Ohio. You'll find a map and a list of the weekend's activities in the center-fold of this issue. Jay Townsend, WS7I, has been managing the hotel room and banquet sales this year and he reports that sales are good. By the time this magazine gets to you, advance sales will have been closed but give the hotel a call if you make a last minute decision to join us. Once again, Frank Fallon, N2FF, has organized the RTTY Forum for us. I hope that all of you can come and join us on May 15 through 18.

This issue includes a nice article by Nick Smith, W4GKM, about his DXpedition to Honduras this year. You no doubt remember Nick as the guy at the Amateur Radio Trader magazine booth at just about every hamfest for 4 or 5 years. Nick retired from hamfesting to pursue his first love — driving airplanes. If you get the urge to charter a biz-jet, call Nick. He'll get you there!

I find that I am frequently answering questions about which product HAL made when. Dating products can be a problem as new products evolve from old ones and the lifetime of a given device or family of devices can be indefinite. Several times, we have revived a "retired product" when volume orders are offered. But, in answer to those requests, I have tried to make a list of products in the order they were first introduced by HAL Devices and by HAL Communications Corp. For me, it was an interesting exercise and brought back a lot of memories. I hope this helps the collectors in the group.

Finally, I have revised and updated the RTTY Dictionary that we've run from time-to-time. This edition includes new terms and

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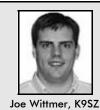
Hits & Misses

acronyms and a few of the old ones have been excised (like selector magnets, stunt box, etc.).

Silent Keys: Once again, it is my sad duty to report the loss of two leaders of our amateur radio group.

VE3UR: Ray Hunter, VE3UR — "Uncle Ray" to many of us — passed away on Friday, March 28, 2003. Ray was a long time and regular attendee at the Dayton Hamvention. Dale Sinner reported Ray's biography in the Fall, 2001 (V49, #3) issue of The New RTTY Journal and we featured Ray's 90th birthday party on the front cover of the June, 1999 issue (V47, #2). Ray had quite a long and colorful career, manufacturing model airplanes, selling model planes and trains, as well as selling amateur radio equipment.

W2LZX: Jack Gutzeit was not an active RTTY operator but he was well known to many of us who have gone to ham shows over the past years. Jack was advertising manager for CQ Magazine for many years and could always be counted on for a good story, help in making show arrangements, or solid advice. Jack was a CW DX operator of the "old school". His KWM-2 went with him everywhere and Jack was always chasing the "new ones". Jack was a WWII B17 pilot and offered much good advice when I caught the "airplane disease" in 1978. He was also among the first to applaud when I sold the '210 in 1983! I worked on him to get on RTTY for many years and almost won him over. I used to kid him that he'd worked all the DX on the "1st Data Mode" (CW) and now he needed to try "Modern Data" (RTTY). But then he retired and moved to Florida where he didn't have space for RTTY gear or a real antenna system. Jack passed away on February 1, 2003.





George W. Henry, K9GWT

K9GWT Linda Henry

Dale Sinner, W6IWO

Jason Allen

The New

RTTY Journal



<section-header>

Hiroshi Aihara, JH1BIH

Hiroshi Aihara, who goes by Hiro, is known to most RTTYers as JH1BIH. He is fifty years old, and is the only ham in his family. He started operating in 1967, and recalls getting a Kleinschmidt machine in 1972. His main interests lie in contesting, DXing, and software. He is currently a software programmer, and used to be a high school teacher. Aside from ham radio, Hiro enjoys offshore fishing.

2003 DL-DX RTTY Contest

July 5, 1100 UTC to July 6, 1059 UTC

1) Object: Contact and exchange QSO information with as many stations as possible using RTTY only. Any station may work any other station.

2) Contest Period: July 5, 2003 (Saturday) from: 11:00 UTC until 10:59 UTC July 6 2003 (Sunday), 24 h.

3) Modes: RTTY only!

4) Bands: All amateur bands 3.5-30 MHz (excluding 10,18 and 24MHz).

5) Entry Categories: (A) Single Operator, multiband — One person performs all operating and logging functions. The use of spotting nets (operating arrangements involving assis-

tance through DX-alerting nets, etc.) is permitted. Single operator stations are allowed only one transmitted signal at any given time. (B) As 5A, but operating time is only six hours - off-time must be greater than 60 minutes. (C) As 5A, but only Dipol-antenna or Groundplane is permitted. (D) As 5C, Operating time is only six hours — off-time must be greater than 60 minutes. (E) Multi operator, single transmitter only - More than one person operates, checks for duplicates, keeps the log, etc. Multi operator stations are allowed only one transmitted signal at any given time. The use of spotting nets (operating arrangements involving assistance through DX-alerting nets, etc.) is permitted.

6) Exchange: RST + QSO number, starting with 001.

7) **QSO Points:** QSO with own country, 5 points. QSO with other countries in own continent 10 points. QSO with other continents 15 points. QSO with DL-Station from EU: +3 points. QSO with DL-Station from other continent: +5 points. Same station can be worked once on each band.

8) **Multiplier:** Each DXCC country on each band, including first contact with Australia,

Canada, Japan and USA. Additionally, each call area in VK, VE, JA and W will count as one multiplier on each band (W1, WA4, JA2, VK4). NOTE: Stations operating from call areas other than their call ID, are asked to use '/x' for their actual call area. i.e. K5DJ/1

9) Logs: All stations must submit an electronic log. All computer-generated "electronic logs" should be submitted as a file either by E-Mail. The log must be in ASCII format. All QSOs must be in chronological sequence. Log must show date and time in UTC, band, call of station worked, RST and exchange sent, RST and exchange received, points per QSO and multipliers. The files should be named after the participant's call sign, so for example XX0YY.ALL and XX0YY.SUM. Cabrillo-Files are preferred.

10) Deadline: Logs must be received by August, 10 2003 to qualify.Mail logs to: LOGS@DL-DX.DE Homepage: http://www.dl-dx.de

11) Awards: Certificates for the first op ten stations in each class. The JUDGES decision will be final and no correspondence will be entered into. By submitting their logs contesters agree to be bound by these rules.

HAL Products Over the Years

Bill Henry, K9GWT

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Many of you have asked me about old HAL products. Below is a list of radio data products we have made and sold over the years. Items in italics are still active as of May 1, 2003.

HAL Devices:

DBM-1 Double-Balanced Modulator Kit	967
111/211/311 RTL Morse Code Keyer	967



HAL Communications Corp:

RVD-1005 Receive Terminal for Baudot RTTY	
RVD-1005A Receive Terminal for ASCII RTTY	
2550 Morse Code Iambic Keyer	



DKB-2010 Morse & Baudot electronic keyboard
ID-1000A Morse Code Repeater Identifier
FYO Morse Code Key
DS-3000 Microprocessor controlled RTTY Terminal
DS-3280 Poll-select Bank Data Terminal
MCEM-8080 Hobby Computer System
ST-6000 High Performance RTTY Demodulator

DS-3281 Data Terminal	7
AQS-RO Agriculture Commodities Data Terminal	7



DS-3282 Data Terminal
DS-3100ASR Split-screen Baudot/ASCII/Morse Terminal1977
ST-5000 Low-cost Solid-state RTTY Demodulator
PS-3100 Printer Controller
8000 Personal Computer System
DS-3285 Bank Data Terminal
DS-2000 Low cost RTTY terminals
8200 Computer System

CT-2100

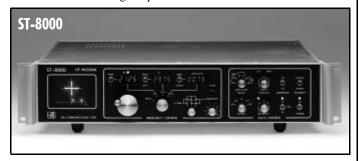


MSU-4 Modem Sharing Unit
DS-2050 Low cost RTTY terminals
MPT-3100 Message Storage Option (MSO) RTTY Terminal1979
Super Duper Contest Dupe Computer
PS-3800 Controller



PS-3900 Controller
DSK-3100 Diskette storage for MPT-3100
CT-2100 Low-cost Communications Terminal with modem1982
KB-2100 Keyboard for CT-2100/CT-2200
CWR-685 Portable RTTY Terminal
CWR-670 Receive Only Telereader

CWR-6850 Portable RTTY Terminal
CWR-6700 Receive Only Telereader
RS-2100 RTTY Tuning Scope



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CRI-200 Computer RTTY Interface	983
PS-3910 Printer Controller	983
PCI-2000 Personal Computer Interface	984
SPT-1 Spectra-Tune Tuning Indicator1	984
DS-RTTY RTTY Terminal Software for IBM-PC	984



LP-120 Loop Power Supply
IF-600 PC-Jr. Data Interface
ST-8000 High performance HF RTTY Modem
ARQ-1000A Error Correcting Terminal
WX-1000 Weather Box message storage terminal
ARQ-200 Radio Telex Modem for Shipboard Use
HFCS-1000 High Frequency Communications Simulator1986
LP-1200A Polar / Neutral Loop Power Supply
ARQ-1000B Error Correcting Terminal
DS-3200 Data Communications Terminal
ST-7000 HF Packet Radio Modem
STI-1000/8 8-Channel Morse Code Receiver
LP-1210 High Reliability 10-channel Loop Power Supply
PCI-3000 PC-Amtor Multi-mode HF Data Modem
SPT-2 Spectra-Tune Tuning Indicator
ST-8000A High Reliability HF Radio Modem
EMAD Emergency Message Alert Device (NMC-MARS)1990
ALERT-1 Message Alert Device
RMX-3100 2-Port Radio Mail Box Switch

RPC-1000 Radio Packet Controller	
MRI-1000 More Receiver Interface	

ST-8000A



RPC-2000 Radio Packet Controller
SCM-1000 Split Channel Modem
Summer CLOVER Modem
PCI-4000 DSP Modem for CLOVER
DS-3486 Data Communications Terminal
PCI-4000/M Multi-mode DSP Modem
P38 Low-cost DSP Modem
RVM-100 Radio Voice Mail
ARQ-1000B/DSC Digital Selective Call Modem
PCI-4000/2K CLOVER-2000 Modem
ST-8000A/DBIN Dual Binary Modem

DSP-4100/2K



DSP-4100 Portable DSP Modem	6
DSP-4100/2K CLOVER-2000 Modem	6
FAX-4100 FAX-Over-Radio Interface	7
DXP-38 Low-cost DSP Modem	8
RTTY-1 RTTY Tuning Indicator	8
HFCS-2000 High Frequency Communications Simulator 1999	9



LP1203 3-Channel Loop Power Supply
DSPWin / DXPWin DSP Modem Software for Windows
DSRTTY-Win RTTY Software for Windows

2002 CQ/RJ WW RTTY DX Contest Results

Boldface represents a plaque winner; italics indicate a certificate winner.

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L																				
	SINGLE	OPERATOR	R ALL BA	ND HIGH F	OWER		N6EU	572	1214	70	139	133	415,188	4Z5AV	895	2613	77	212	85	977,262
Call	QSOs	Pts.	Z	С	US/VE	Final Score	I2SVA	500	1214	70	170	93	404,262	J49XB	989	2289	85	230	96	940,779
AA5AU RK4FF	2416 2323	5620 5480	116 113	309 341	228 142	3,669,860 3,266,080	K6RIM NA2M	529 526	1190 1233	68 67	150 155	118 97	399,840 393,327	YU7AM 9A3ZI	858 935	2154 2345	78 70	231 205	120 116	924,066 916,895
KH7X	1925	5731	114	225	212	3,157,781	KY7M	541	1283	61	139	93	375,919	VE3BUC	862	2253	77	199	119	889,935
UP5P	1918	5441	112	322	116	2,992,550	WOTY	494	1143	76	155	95	372,618	OK2WH	882	2124	70	229	106	860,220
M0SDX P3F	1864 1836	4718 5386	109 90	316 273	179 139	2,849,672 2,703,772	K4LQ DL9NDV	445 442	1207 1060	73 66	178 175	54 63	368,135 322,240	K7SV Y03JF	768 990	1924 2457	92 68	236 175	119 103	860,028 850,122
IKOYVV	1609	4165	114	304	167	2,436,525	KE5K	375	971	75	165	63	294,213	W3SE	892	2000	86	162	168	832,000
AH0B UW5Q	1937 1813	5766 4375	90 102	222 294	109 157	2,427,486 2,419,375	WA3AAN LU1BJW	423 423	962 1207	53 57	141 117	108 63	290,524 286,059	SM5UFB W8UL	949 803	2265 2050	60 82	197 210	102 97	813,135 797,450
EA3NY	1716	4352	95	278	177	2,393,600	W4TTY	387	1024	62	155	52	275,456	N4DSL	821	2030	74	187	135	797,148
W1ZT	1694	4247	95	274	193	2,386,814	IK0CNA	447	1056	51	129	73	267,168	YO3APJ	727	1838	86	231	108	781,150
K4GMH RZ3AZ	1737 1706	4368 4011	100 106	275 318	167 136	2,367,456 2,246,160	DL4MFP N2ED	372 381	974 989	61 63	131 143	80 59	264,928 262,085	JS10 YN UA4FX	797 970	2208 2171	86 69	177 211	89 76	777,216 772,876
ZW5B	1536	4518	94	239	144	2,155,086	TA9J	482	1409	41	128	17	262,074	DL2FAG	777	1883	81	221	100	756,966
OH2BP W3FV	1549 1580	3833 4237	107 87	299 268	145 141	2,111,983 2,101,552	SQ4CTS DJ1TU	570 363	1233 858	35 66	133 167	39 52	255,231 244,530	RA9FRD N6OJ	782 848	2247 1992	73 69	209 163	54 133	754,992 727,080
VA3DX	1360	3682	99	200	167	2,014,054	ES4RD	589	1354	39	116	24	244,330	MM0BQI/P	856	1974	79	215	74	726,432
DKOEE	1392	3473	102	308	156	1,965,718	TF3A0	433	1064	37	93	69	211,736	PA0WRS	709	1830	81	200	114	722,850
LY3BH WW7OR	1375 1564	3534 3761	104 100	273 228	145 161	1,844,748 1,839,129	JN1BMX SP4EEZ	375 294	1081 737	43 61	116 140	16 50	189,175 184,987	UA3PW JI1RXQ	830 715	1922 2029	78 86	225 167	69 95	714,984 706,092
WX4TM	1511	3661	89	238	171	1,823,178	W5BBR	284	697	68	134	61	183,311	OK2RU	687	1689	83	235	99	704,313
SM4RGD DL5WW	1378 1349	3465 3235	91 98	273 298	153 140	1,791,405 1,733,960	K0JPL N5PA	323 352	704 848	66 43	104 113	77 47	173,888 172,144	RA9XF DK3VN	724 725	2046 1785	71 64	210 192	55 110	687,456 653,310
SM5FUG	1349	3235	98	296	140	1,730,214	N4GI	304	741	43 52	117	62	171,171	F6IRF	659	1619	76	206	120	650,838
HA3LI	1415	3473	85	264	147	1,722,608	DK7ZT	314	739	47	116	57	162,580	SP6IHE	701	1652	79	221	86	637,672
YU7YG IT9GSF	1390 1257	3331 3132	96 101	285 281	130 155	1,702,141 1,681,884	HL3AMO N5LYG	246 358	670 631	68 52	113 87	44 91	150,750 145,130	SP6EKS WD4GBW	682 785	1803 2179	69 55	170 173	112 61	632,853 629,731
K5AM	1568	3653	85	213	158	1,665,768	W1NR	244	673	51	126	23	134,600	W1VET	704	1771	67	183	98	616,308
W4GKM	1411	3231	89	242	176	1,638,117	W6JOX	259	765	51	123	0	133,110	KL7AC	799	2003	60	111	131	604,906
EA1AKS OK2BXW	1391 <i>1301</i>	3444 3372	82 83	227 240	156 148	1,601,460 1,588,212	N5KR W7DPW	263 268	633 568	46 53	100 78	51 85	124,701 122,688	JK1IQK F6FTB	642 621	1753 1546	84 81	170 200	90 105	603,032 596,756
EA1BD	1295	3282	81	244	153	1,568,796	W9SE	264	509	54	91	84	116,561	OK2PCL	663	1781	72	162	101	596,635
YO9HP I1COB	1321 1326	3144 3346	90 75	273 222	121 156	1,521,696 1,515,738	N6VH PA3EVY	215 237	498 561	55 43	86 95	57 24	98,604 90,882	SM6BSK Z31MM	606 706	1514 <i>16</i> 93	75 69	212 197	106 85	595,002 594,243
RV9FQ	1273	3657	79	247	88	1,513,998	K5CM	219	559	38	81	30	83,291	W6RLL	678	1547	81	172	130	593,267
IK2RZP	1306	3225	85	251	131	1,506,075	AD6WL	196	407	58	68	72	80,586	OK1FHI	626	1528	83	211	93	591,336
JA1BWA W0ETC	1091 1219	3078 2897	115 91	261 244	112 154	1,502,064 1,416,633	K7JJ KY5G	206 172	491 397	41 43	74 83	42 52	77,087 70666	DJ3NG DL4RCK	700 714	1661 1622	69 68	189 207	91 74	579,689 566.078
UA6AHF	1443	3275	81	257	82	1,375,500	KC7V	165	448	45	83	18	65,408	GW4MVA	679	1613	66	188	84	545, 194
LO7H IK6SNQ	1277 1063	3772 2625	67 96	181 256	111 126	1,354,148 1,254,750	RN2FA RX9TX	<i>17</i> 5 161	425 460	38 28	88 76	18 12	61,200 53,360	KK6T PA0EHF	597 600	1390 1505	85 73	174 183	129 97	539,320 531,265
RV9BB	1003	2023	83	272	75	1,254,740	DK4RL	149	381	39	68	15	46,482	DM5GI	635	1458	74	210	79	529,254
LN1HQ	1125	2771	91	242	116	1,244,179	ACOM	145	392	19	63	18	39,200	EA7AJR	688	1665	54	157	103	522,810
DL6JZ EA5DFV	1060 1177	2519 2884	90 74	261 209	125 131	1,199,044 1,193,976	AI6A W4UW	101 114	297 320	36 34	80 52	0	34,452 29,440	W2WB DL8NFU	563 614	1372 1458	75 65	<i>197</i> 198	105 85	517,244 507,384
ZL2AMI	1067	3167	78	183	110	1,174,957	WOMN	95	228	27	53	27	24,396	WW3S	608	1631	71	175	62	502,348
W4UK VE7CF	1151 1089	2681	85 82	207 179	133 153	1,139,425	4W6MM CP1FF	95 48	279 133	16 16	20 29	2	10,602	VE9DX UN6G	551 667	1396 1855	71 63	171 174	116 30	499,768
DAOBH	989	2724 2479	87	236	129	1,127,736 1,120,508	YL2KF	40 21	47	13	18	6 2	6,783 1,551	DF7ZS	579	1388	67	200	82	495,285 484,412
OM8A	1018	2648	74	209	138	1,114,808								GU0SUP	541	1338	71	194	97	484,356
VE6YR RU0LL	1033 1062	2675 2986	83 79	184 203	140 82	1,088,725 1,086,904	KH7X: KH6N UR3QCW, Z							4X6UU K2PS	622 566	1784 1471	60 70	183 169	28 84	483,464 475,133
K3SV	1029	2665	73	215	114	1,071,330	LA6FJA, DA	BH: DL3GA	, OM8A: OI	M3RM, LN				AC6JT	682	1304	72	140	149	470,744
K5ZD VE3GLA	904 876	2336 2299	83 80	241 221	111 126	1,016,160 981,673	JA2ZJW: JH	2CMI, 4W6M	IM: TF3MM					UX1IL WG7Y	640 619	1481 1382	69 75	198 159	50 105	469,477 468,498
N8KM	923	2383	82	215	110	969,881		SINGLE	OPERATO	R ALL BA	ND LOW F	POWER		UW7F	646	1437	67	214	45	468,462
GI4KSH	1135	2781	59	180	106	959,445	Call	QSOs	Pts.	Z	С	US/VE	Final Score	DL8NBE	581	1381	70	195	74	468,159
LA7CL KB3TS	976 917	2327 2497	76 72	228 213	103 89	947,089 933,878	P43P W2UP	2725 2015	8110 5141	105 112	277 325	217 190	4,857,890 3.223.407	DL3PS VA6MM	760 603	1664 1520	55 54	184 124	42 123	467,584 457,520
UT4HZ	994	2294	80	238	89	933,658	ZX2B	1683	4961	85	230	155	2,331,670	DL2YCA	606	1390	70	191	68	457,310
W8LU NN6XX	911 <i>916</i>	2365 2108	82 86	212 187	92 146	912,890 883,252	UA9CDV RU3QW	1618 1714	4672 3967	93 106	280 322	103 127	2,223,872 2,201,685	UA4FCO ZL3JT	682 563	1479 1660	70 60	235 127	0 83	451,095 448,200
YL2GC	953	2252	68	230	93	880,532	UW5U	1454	3475	99	296	140	1,859,125	VE3GSI	519	1386	70	171	80	444,906
GW4KHQ	986	2220	73	248	58	841,380	ZC4DW	1402	4108	88	257	90	1,786,980	KOCIE	608	1362	65	153	101	434,478
HB9DCM DL2HYH	801 786	2067 1908	81 84	<i>199</i> 241	127 94	841,269 799,452	LX5A UY8IF	<i>1520</i> 1495	3745 3497	84 83	254 269	118 123	1,707,720 1,661,075	IU1DCI DK3WN	630 573	1579 1348	48 64	124 183	102 71	432,646 428,664
LN1V	954	2288	63	188	93	787,072	EU1MM	1335	3163	96	296	124	1,632,108	UA9CR	509	1441	63	184	49	426,536
SP9LJD OK2SG	797 664	2008 1654	64 85	178 255	128 107	742,960 739,338	ON4ADZ VP5JM	1237 1325	3059 3548	102 69	275 198	144 142	1,593,739 1,451,132	RA9AU S52U	611 572	1770 1348	45 66	157 185	38 63	424,800 423,272
W6IHG/4	716	1800	85	255	107	738,000	VE3IAY	1073	2822	86	236	142	1374,314	RA3BB	585	1470	62	132	86	423,272 411,600
RD4M	770	1823	81	216	97	718,262	W0YR/4	1155	3077	79	239	114	1,329,264	RW6BN	587	1307	63	199	50	407,784
DF3GY RN1AO	631 832	1641 1976	82 70	202 187	130 80	679,374 665,912	G4RS UR5MID	1164 1182	2834 2821	87 89	252 249	129 118	1,326,312 1,286,376	K6HGF SV5/G40BK	586 618	1271 1440	61 58	137 151	118 68	401,636 398,880
OK1OX	664	1635	79	212	80	606,585	WB8K	1174	2907	87	229	125	1,281,987	K6EP	501	1105	76	135	147	395,590
OH2GI N2FF	680 618	1698 1555	67 74	186 192	88 92	579,018 556,690	EU1AZ 4Z5CP	1187 <i>1115</i>	2780 3196	83 <i>8</i> 2	255 234	102 62	1,223,200 1,208,088	WF3M SP3OL	501 473	1272 1181	69 70	165 186	75 73	393,048 388,549
WOHW	658	1588	74	173	96	541,508	EA7FTR	1181	2901	73	205	137	1,203,915	PA3FGJ	535	1306	60	171	66	387,882
DL1YD	576	1455	76	196	98	538,350	9M6LSC	1103	3270	87	187	87	1,180,470	IZ8DVD	557	1289	65	172	55	376,388
AD6KA NW6S/4	688 603	1513 1457	69 72	152 184	130 104	531,063 524,520	PS7TKS KI6DY	1047 1159	3086 2586	72 72	189 200	113 168	1,154,164 1,137,840	OM5XX UT5UML	472 488	1297 1178	70 72	134 184	85 62	374,833 374,604
G3UFY	587	1499	65	177	95	505,163	PA3EMN	968	2339	86	251	129	1,089,974	VU2WAP	530	1466	64	137	53	372,364
N9QQK	586	1527	70	184	75	502,383	DL7VOG	937	2310	83	263	124	1,085,700	JR1NHD	448	1280	62	157	68	367,360
JA2FSM K9DJ	581 643	1653 1650	69 58	<i>149</i> 149	83 87	497,553 485,100	UA3SAQ UR7EU	1026 1090	2382 2583	90 76	266 223	99 107	1,083,810 1,048,698	PY7ZY AY4DX	483 474	1407 1367	54 58	123 130	84 77	367,227 362,255
G3XTT	553	1356	70	192	92	480,024	S56A	886	2224	89	247	130	1,036,384	T93Y	414	1124	71	156	95	361,928
RW3LB	605 515	1379 1478	70 74	209 147	59 91	466,102 461,760	VE2AXO OK2PMS	982 936	2710 2261	73 85	205 239	101 128	1,027,090 1,021,972	6J1YYD 9H9PA	571 682	1363 1563	51 45	103 125	110 57	359,832 354,801
WD4DDU	531	1360	71	188	80	461,040	OK2VWB	873	2171	89	250	130	1,018,199	JO3JYE	529	1434	63	134	50	354,198
W6OAT OK1FAV	595 604	1453 1470	62 66	151 172	101 64	456,242 443,940	WA1EHK F6AUS	912 932	2318 2332	82 80	234 219	123 133	1,017,602 1,007,424	IZ4DZD EA6DD	524 508	1208 1202	64 55	183 153	42 74	349,112 338,964
K1US	599	1601	54	164	57	440,275	H2E	974	2810	69	228	57	994,740	DL1ZU	426	1090	69	158	79	333,540
DF3IS	616	1442	60	171	72	436,926	AH6OZ	893	2645	74	146	155	991,875	VE1AOE	611	1625	37	106	60	329,875
														•						

	UN4PG VE3AGC K3ZV HB9CAL HA3VAM OM5JA	458 435 440 <i>502</i> 453 499	1264 1074 1071 <i>1228</i> <i>1103</i> 1167	62 60 55 60 55	165 139 153 <i>143</i> <i>148</i> 167	31 103 79 62 79 42	326,112 324,348 322,371 319,280 316,561 308,088	OH3YM DL1DTL NNST G3URA <i>KL7WP</i> DL1ARJ	263 258 190 244 220 178	590 582 441 564 553 497	36 38 53 36 38 48	106 86 95 88 <i>6</i> 6 65	13 30 53 33 56 63	91,450 89,628 88,641 88,548 <i>88,480</i> 87,472	VE7MOB WP2S KC7WUE UT5UGQ RA2FW KB2Z	21 14 12 10 9 5	47 32 29 25 23 15	13 13 11 9 7 3	16 14 12 9 8 5	11 2 4 2 0 0	1,880 928 783 500 <i>345</i> 120
UNMAR US UNMAR UN	RA0FN W1BYH M0BEX N7UJJ WN1OTV	453 423 456 463 436	1287 951 1096 1078 1051	53 59 49 60 57	132 153 139 123 148	51 107 87 95 78	303,732 303,369 301,400 299,684 297,433	WB0YRQ K6BIR JA1BNW DL2DBS <i>EX2U</i>	215 193 192 240 245	461 448 559 540 653	38 50 37 37 29	87 83 95 92 <i>8</i> 5	59 56 18 24 <i>9</i>	84,824 84,672 83,850 82,620 80,319	ZX2B: PY2M 5B4AGE, J49 6J1YYD: XE1	XB: DJ9XB YYD, 9H9P	YO3APJ: 1 A: PA7PTR/	UW7F: UI H3TE, HA	R5FEO, IL 3VAM: HA	J1DCI: IK1	H2E: GPG
1.1.5.6. 20 100 0 <td< td=""><td>W3MEL</td><td>540</td><td>1615</td><td>35</td><td>148</td><td>0</td><td>295,545</td><td>YU1AB</td><td>192</td><td>460</td><td>47</td><td>115</td><td>10</td><td>79,120</td><td>Call</td><td></td><td></td><td></td><td></td><td></td><td>Final Score</td></td<>	W3MEL	540	1615	35	148	0	295,545	YU1AB	192	460	47	115	10	79,120	Call						Final Score
Nor- Street 10 100 10	LY1CT	525	1181	51 57	161	37 57	294,069	SP6NVK	223	500	36 32	99	23 9	79,000	LU1HF	1429	4228	31	96	54 53	765,268
MICL OI <	WM7A	411	880	72	136	119	287,760	IV3KAS	188	442	43	89	40	76,024	CX5BW	986	2924	25	77	49	441,524
Book	M0COP	438	1039	55	148	72	285,725	K1JN	166	440	43	100	24	73,480	LT1A	855	2511	27	88	51	416,826
Name Hart	SW2A JA1XUY	435	<i>991</i> 1051	61 71	<i>158</i> 138	64 56	280,453	N0YKN	167	426 447	45 45	92 85	30 29	71,142	MOTTT	912	2398	31	84 88	49 50	393,272
Obder 64 Unit 65 0 65 0 65 0 7 0 2 0 5 0 </td <td>HB9AWS</td> <td>444</td> <td>1047</td> <td>56</td> <td>155</td> <td>52</td> <td>275,361</td> <td>DL9ST</td> <td>192</td> <td>453</td> <td>42</td> <td>94</td> <td>18</td> <td>69,762</td> <td>S50R</td> <td>795</td> <td>2094</td> <td>31</td> <td>82</td> <td>52</td> <td>345,510</td>	HB9AWS	444	1047	56	155	52	275,361	DL9ST	192	453	42	94	18	69,762	S50R	795	2094	31	82	52	345,510
action	GM0JHF	443	1041	52	139	62	263,373	NOUX	204	443	35	66	52	67,779	K4EA	787	2099	29	90	42	337,939
Backer Disk <	4K6DI	400	1099	57	151	28	259,364	K9PY	156	406	48	89	20	63,742	DL1LH	729	1907	33	86	50	322,283
Bit Max Bit Max <t< td=""><td>SQ4CTS</td><td>570</td><td>1233</td><td>35</td><td>133</td><td>39</td><td>255,231</td><td>RA0ANO</td><td>155</td><td>430</td><td>37</td><td>82</td><td>23</td><td>61,060</td><td>YO6BHN</td><td>473</td><td>1234</td><td>32</td><td>81</td><td>37</td><td>185,100</td></t<>	SQ4CTS	570	1233	35	133	39	255,231	RA0ANO	155	430	37	82	23	61,060	YO6BHN	473	1234	32	81	37	185,100
LATTA 40 100 4 400 7 740 9 0.00 1 10	W5MK	383 408	954	53	101 127	111 78	248,430 246,132	NI4S	162	428	42 34	78	25 21	57,912 56,924	ES7AAZ	406	1059	30	68 85	38 38	164,608 162,027
Link Link <thlink< th=""> Link Link</thlink<>	LA5TFA	620	1330	40	140	1	240,730	WN3C	152	431	31	86	10	54,737	LZ2JA	398	1025	26	72	45	146,575
Bit Model Gold Processor Bit Model Source Processor Source Procesor Source Processor Source Processor	6J2AUB F5UTN	435 470	1087 1046	49 58	91 170	80 0	239,140 238,488	DL8SDC VE2OWL	136 139	366 351	39 42	60 71	48 40	53,802 53,703	UT2UZ LT1D	375 426	992 1250	30 18	76 54	38 41	142,848 141,250
VPF 371 801 60 10 70 71 10 70 <	SN8R	429	971	58	181	0	232,069	W3DSX	152	446	33	87	0	53,520	F5IJT	413	1030	28	68	28	127,720
Addity Sol Sol <t< td=""><td>VE9FX K6TA</td><td>327 383</td><td>854</td><td>56 63</td><td>119 99</td><td>76 86</td><td>214,354</td><td>NE0P W4JH</td><td>143 136</td><td>326 379</td><td>44 39</td><td>65 81</td><td>48 13</td><td>51,182 50,407</td><td>JA7EMH EU1SA</td><td>308</td><td>888 825</td><td>30 27</td><td>72 69</td><td>30 42</td><td>117,216 113,850</td></t<>	VE9FX K6TA	327 383	854	56 63	119 99	76 86	214,354	NE0P W4JH	143 136	326 379	44 39	65 81	48 13	51,182 50,407	JA7EMH EU1SA	308	888 825	30 27	72 69	30 42	117,216 113,850
Definition 232 641 9 102 84 90 102 647 10 102 <th< td=""><td>JA1BHK</td><td>363</td><td>985</td><td>53</td><td>122</td><td>38</td><td>209,805</td><td>F5PHW</td><td>154</td><td>359</td><td>41</td><td>89</td><td>8</td><td>49,542</td><td>F6IRG</td><td>313</td><td>819</td><td>23</td><td>57</td><td>41</td><td>99,099</td></th<>	JA1BHK	363	985	53	122	38	209,805	F5PHW	154	359	41	89	8	49,542	F6IRG	313	819	23	57	41	99,099
UNVLA 05 112 2 0 0 111 25 7 7 19 4 4 11 4 5 2 <	DH9SB	328	814	58	129	59	200,244	PA3CDN	161	358	40	93	0	47,614	JA1SJV	258	734	27	64	33	91,016
website state <	UN7JX	405	1121	38	106	31	196,175	WB0ULX	134	352	37	78	18	47,168 46,816	RV3APM	212	536	26	64	25 26	62,176
Nobility Single field Sin	W4BCG	307	694	63	137	74	190,156	UA3RW	134	332	30	78	28	45,152	RU3XB	149	373	21	44	25	33,570
Byster 23 172 et al. AMED Vicity 168 500 65 62 15 42 150 Continued on next page Descent 230 162 42 172 Vicity 168 500 65 67 <	W0SM	388	953	46	99	52	187,741	ER3ZZ	169	371	29	87	0	43,036	OH7JJT	157	361	19	48	13	28,880
1775/8 389 64 775.50 360 67 775.50 360 67 775.50 360 67 775.50 360 67 775.50 360 777.50 775.50 360 777.50 775.50 360 777.50 775.50 360 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 777.50 <td>K9RT RN4SS</td> <td>293 407</td> <td>792 870</td> <td>61 43</td> <td>139 140</td> <td>32 27</td> <td>183,744 182,700</td> <td>AK6DV YO5TP</td> <td>108 140</td> <td>300 374</td> <td>45 29</td> <td>82 49</td> <td>13 31</td> <td>42,000 40,766</td> <td>LWIHDJ</td> <td>110</td> <td></td> <td></td> <td></td> <td></td> <td></td>	K9RT RN4SS	293 407	792 870	61 43	139 140	32 27	183,744 182,700	AK6DV YO5TP	108 140	300 374	45 29	82 49	13 31	42,000 40,766	LWIHDJ	110					
TATAM See TOP See TOP See TOP See See <th< td=""><td>TF3VS</td><td>369</td><td>847</td><td>43</td><td>120</td><td>44</td><td>175,329</td><td>JG3NKP/1</td><td>124</td><td>362</td><td>30</td><td>61</td><td>19</td><td>39820</td><td></td><td></td><td></td><td></td><td></td><td>-</td><td>_</td></th<>	TF3VS	369	847	43	120	44	175,329	JG3NKP/1	124	362	30	61	19	39820						-	_
NMMOP 23. 66.2 96. 11 11 200. 24. 33. 27. 71. 25. 26. NUMPER 26. 27. 26. 11. 33. 27. 71. 35. 27. 71. 35. 27. 71. 35. 27. 71. 35. 27. 71. 35. 27. 71. 35. 27. 71. 35. 27. 71. 35. 27. 36. 27. 27. 36. 27. 27. 36. 27. 27. 36.<	JH4BTI	349 289	835	59 54	112	0 36	172,353 168,670	KB3IEO	136 111	302	38	54 76	43 15	39,603 38,958	W	Γ4I	Co	nte	st	To	ols
IpProx. 366 672 61 110 83 119 237 38 66 21 38.88 IPProx.	N1MGO	283	682	58	117	71	167,772	SM6BUV	114	300	34	53	42	38,700		Tools	to and	lyze	and c	heck	
UVTC1 318 661 67 67 67 65 80758M 134 311 24 66 74 12 34832 VPTR1 287 700 66 113 64 612,00 331 24 66 74 12 333,577 VPTR1 287 700 66 113 64 612,00 77 73 60 11 73 335,77 VPTR1 287 700 66 113 34 911,76 286 33 64 21 333,77 64 21 333,77 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 33,76 64 21 23,77 23 64	N7PWZ	306	672	51	110	83	163,968	AA8EN	119	297	38	65	21	36,828		Ca	brillo	form	at log	js	
BPRT 287 700 65 131 391 17500 VEFFE 166 277 80 66 13 3331 LHEU 370 67 46 44 50 <td>W7GTO</td> <td>318</td> <td>651</td> <td>57</td> <td>97</td> <td>95</td> <td>162,099</td> <td>SQ7FSM</td> <td>134</td> <td>311</td> <td>24</td> <td>65</td> <td>23</td> <td>34,832</td> <td>Now y</td> <td>ou can</td> <td>use the</td> <td>e same</td> <td>softv</td> <td>vare u</td> <td>sed by</td>	W7GTO	318	651	57	97	95	162,099	SQ7FSM	134	311	24	65	23	34,832	Now y	ou can	use the	e same	softv	vare u	sed by
Orbitol L4SU Observed Support Outrate (1) ExtMMA 120 277 28 66 28 32.844 Contest results! 9F0269 31 967 41 124 31 11 11 12 21 13 14 14 14 124 14 124 14 124 14 </td <td>SP9FT</td> <td>287</td> <td>700</td> <td>55</td> <td>131</td> <td>39</td> <td>157,500</td> <td>VE2FFE</td> <td>106</td> <td>277</td> <td>30</td> <td>60</td> <td>31</td> <td>33,517</td> <td>Officia</td> <td>l Conte</td> <td>est Mar</td> <td>nagers</td> <td>to ch</td> <td>eck lo</td> <td>gs and</td>	SP9FT	287	700	55	131	39	157,500	VE2FFE	106	277	30	60	31	33,517	Officia	l Conte	est Mar	nagers	to ch	eck lo	gs and
FORMS 308 805 45 54 72 152,05 72 0 310,05 JARNH VESS 122 152,05 122,05	OH2LO	308	741	47	132	32	156,351	EA1AHA	120	277	28	65	26	32,963	exped	ite proo				and t	imely
VAXZ 286 665 47 114 66 146,030 UPLZX 108 226 31 66 33 23,066 than what is provided by most context logging programs. The user can value of the dx changes. The individual user is given the opportunity to look at the log in much the same way as an official log checker. VAXM 246 79 51 162 40 140,016 110 228 25 29 60 1 228,016 tass appoinded to base changes. The individual user is given the opportunity to look at the log in much the same way as an official log checker. PSTZZ 238 670 45 110 238 271 28 59 24 25 29 60 1 228,016 1 238,016 110 238 50 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 28,016 1 <td< td=""><td>F05PS</td><td>306</td><td>895</td><td>45</td><td>54</td><td>72</td><td>153,045</td><td>SM4XIH</td><td>131</td><td>299</td><td>32</td><td>72</td><td>0</td><td>31,096</td><td>33/17 41 1</td><td>Charl</td><td></td><td></td><td></td><td></td><td></td></td<>	F05PS	306	895	45	54	72	153,045	SM4XIH	131	299	32	72	0	31,096	33/17 41 1	Charl					
WideBols 303 644 98 75 88 142.324 PRCY 95 286 90 7 282.85 90 7 282.85 90 7 282.85 90 7 282.85 90 7 282.85 90 7 92.825 90 7 282.85 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 9 9 22 20 0 7 8 7 8 9 10 29 28 42 9 8 7 8 7 8 7 8 7 8 7 8 7 8 10 28 10	VA3XRZ K6OWL	256	655 697	47 53	114 98	65 61	148,030 147,764	UT4ZX KA0EIC	98 107	262 258	34 31	49 58	30 25	29,606 29,412	than what	is provided	by most co	ontest log	ging prog	grams. Th	e user can
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DK6CQ 243 647 53 100 53 133,282 F6ACC 115 251 24 64 9 24,347 columns through simple clcks of the mouse, enters the required head- simple clcks of the mouse, enteres thead- simple clcks of the mouse, enters thead- si	SM3AF	241	607	46	133	26 43 42	134,754	N4GXP/8	108	271	31	50	14	25,745	log into th	e Cabrillo	format. T	he user si	imply ide	entifies ea	ach of the
KT4U 233 638 57 126 21 130,152 KB2EOQ 102 194 28 38 43 21,146 GNNUYE 288 653 40 114 44 129,764 W/W 90 207 28 43 30 20,907 submission. M7GN 246 562 59 99 67 126,450 EUBTV 94 220 29 55 5 20,240 Mission. Master Call Maintenance - Create and maintain your own master Calls in database for use with WriteLog. WF1B RTTY, or with the SPEQQ 200 N57.00 42 127.00 N57.00 N57.00 </td <td>DK6CQ N6PC</td> <td>243 281</td> <td>647 583</td> <td>53 50</td> <td>100 90</td> <td>53 88</td> <td>133,282 132,924</td> <td>F6ACC JA2UJ</td> <td>115 91</td> <td>251 271</td> <td>24 24</td> <td>64 39</td> <td>9 26</td> <td>24,347 24,119</td> <td>er informa</td> <td>tion, and sa</td> <td>aves the log</td> <td>g in Cabri</td> <td>llo forma</td> <td>at. The res</td> <td>sultant log</td>	DK6CQ N6PC	243 281	647 583	53 50	100 90	53 88	133,282 132,924	F6ACC JA2UJ	115 91	251 271	24 24	64 39	9 26	24,347 24,119	er informa	tion, and sa	aves the log	g in Cabri	llo forma	at. The res	sultant log
Kalu 236 575 55 111 55 127.075 DL6ABB 90 214 26 55 15 20.544 Master Call Maintenance - Create and maintain your own master of the set	KT4U	233 280	638 633	57 48	126 156	21 1	130,152	KB2EOQ	102 96	194 207	28 28	38 43	43	21,146			king with	WT4I Lo	g Check	er or for	electronic
SV1CAX 327 700 42 137 1 126,000 NSZC 80 196 33 48 22 20,188 International and the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with whete 0g. with the callsign database for use with the call with the callsign database for use with the call with with the call with the call with the call with the call with with	K3IU	236	575	55	111	55	127,075	DL6ABB	90	214	26	55	25 15	20,544	Master (Call Main	ntenance	- Create	and main	tain your	own mas-
KH6MP 259 771 39 54 65 121,818 SM4RLD 117 248 23 51 4 19,344 base from existing super check partial files, or build one semi-automatically from the callsigns found in Cabrillo format logs. H98GRV 279 627 43 127 21 19,25 2 19,25 V170V 238 549 53 99 57 114,741 D,61X 92 201 22 60 0 16,462 C74DX 246 566 41 103 49 110,99 1208XZ 100 188 27 35 18 15,040 - 30+ Major Contests - Check 10 Minute Rule S69AA 222 551 44 101 55 110,200 PAIVC 100 218 12 39 10 13,288 - Automatic Scoring - Check 6 Bad Change SP4BOS 249 585 51 115 19 108,225 K2SD 67 196 20 37 0 11,17 - Automatic Scoring - Uneck 6 Bad Change - Display Off Times	SV1CAX	327 250	700	42 57	137 120	1 23	126,000	N5ZC	80 81	196 224	33 36	48 42	22 12	20,188 20,160							
ON7SS 281 643 44 112 29 118,955 T50VD 93 206 26 56 5 17,922 N7GVV 288 549 53 99 57 114,741 DiGTK 92 201 22 60 0 16,482 15,792 - Cr4DX 246 586 41 101 55 110,204 SPERGC 71 188 27 35 18 15,040 - - Cabrillo Format Logs - Search and Replace S69AA 222 551 44 101 55 110,204 SFPRGC 71 188 27 35 18 15,040 - - Cabrillo Format Logs - Search and Replace S69AA 222 551 44 101 55 1117 10 218 114 10 12,117 - Autoratic Scoring - Check 10 Minute Rule V7/PF 207 539 48 84 66 106,722 CX4SS 76 123 14 16 17	SV1BDO	326	699	38	134	0	120,228	IZ8DWH	106	227	21	51 52	2	19,295							emi-auto-
CT4DX 246 586 41 103 49 13.098 1208XZ 100 168 28 54 12 15,792 - Cabrillo Format Logs - Search and Replace S59AA 222 551 44 101 55 110.204 SPERGC 71 188 27 35 18 15,040 - Cabrillo Format Logs - Search and Replace S59AA 222 551 44 101 55 110.200 PAIVC 100 218 12 39 10 13,288 - Automatic Scoring - Check 10 Minute Rule SP4BOS 249 585 51 115 19 108.225 K2SD 67 196 20 37 0 11.172 - Automatic Scoring - Check 10 Minute Rule V70HY 220 565 51 115 19 108.252 CX4SS 76 223 14 16 17 10.481 - Unique +1 Processing - View Log by Field WA2HFI 231 490 51 91 66 101.920 KESOG 62 125 2	ON7SS	281	643	44 53	112	29 57	118,955	T95DVD	93	206	26 22	56 60	5	17,922	-		e			U	
KUBRA 219 549 50 105 44 109,251 K3FH 58 171 24 48 0 12,372 - Automatic Scoring - Check 6 Band Change SP4BOS 249 585 51 115 19 108,225 K2SD 67 196 20 37 0 11,172 - Dupe Checking - Display Off Times DK7PP 207 539 48 84 66 106,722 CX4SS 76 223 14 16 17 10,481 - Unique +1 Processing - View Log by Field W28BWZ 246 452 47 81 102 103,960 6330YJ 56 163 20 38 3 9,433 W20F 201 577 49 97 28 100,398 M3GOJ 45 108 13 29 9 5,568 SP2MKI 220 561 531 46 101 42 100,359 M3GOJ 45 108 13 29 9 5,55	CT4DX W6KY	246 232	586 536	41 55	103 88	<i>49</i> 66	113,098 112,024	IZ0BXZ SP6RGC	100 71	168 188	28 27	54 35	12 18	15,792 15,040							
DKTFP 229 503 43 84 66 106/222 CARSS 76 213 14 16 17 10/351 - Unique +1 Processing - View Log by Field RZ4AG 213 526 45 115 44 106/222 CARSS 76 213 14 16 17 10/481 - Unique +1 Processing - View Log by Field RZ4AG 213 526 452 47 81 102 103/960 63/07J 56 163 20 38 3 9.943 WB6BW2 246 452 47 81 102 103/960 63/07J 56 163 20 38 3 9.943 WA2HFI 231 490 51 91 66 101/920 KE50G 62 125 20 28 21 8.625 8.100 - 116 13 10 7.254 5.508 8.100 - 16 17 7.254 6 3.192 3.192 3.192 3.192 3.192 3.192 3.192 3.192 3.192 </td <td>KJ6RA SP4BOS</td> <td>219 249</td> <td>549 585</td> <td>50 51</td> <td>105 115</td> <td>44 19</td> <td>109,251</td> <td>K3FH K2SD</td> <td>58 67</td> <td>171 196</td> <td>24 20</td> <td>48 37</td> <td>0</td> <td>12,312</td> <td>- Automo</td> <td>atic Scor</td> <td></td> <td></td> <td>- Check</td> <td>6 Band</td> <td>Change</td>	KJ6RA SP4BOS	219 249	549 585	50 51	105 115	44 19	109,251	K3FH K2SD	58 67	171 196	24 20	48 37	0	12,312	- Automo	atic Scor			- Check	6 Band	Change
WB68WZ 246 452 47 81 102 103,960 64,30YJ 56 163 20 38 3 9,943 WT4I Contest Tools \$40 Cabrillo Converter \$20 W22FN 226 566 41 91 48 101,820 KESOG 62 125 20 28 21 8,625 LV2FN 226 566 41 91 48 101,820 KESOG 62 125 20 28 21 8,625 SP2MKI 220 562 41 85 54 101,160 JAIIZZ 53 150 18 36 0 8,00 http://www.wt4i.com JA2KCY 201 577 49 97 28 100,359 M3GOJ 45 108 13 29 9 5,568 S Ron Stailey, K5DJ DK3RA 205 511 50 108 37 96 25 51 31 45 100,359 M3GOJ 45 108 23 6 3,192 3,192 NDCZ 29 92	DK7FP	207	539	48	84	66	106,722	CX4SS	76	223	14	34 16 35	17	10,481			ssing				
SP2MKI 220 562 41 85 54 101,160 JA1/IZZ 53 150 18 36 0 8,100 http://www.wt4i.com JA2KCY 201 577 49 97 28 100,398 W2OQ 50 117 15 30 17 7,254 e-mail: sales@CabrilloTools.com AG4TJ 211 531 46 101 42 100,359 M3GOJ 45 108 13 29 9 5,508 ROS Ros (CabrilloTools.com) EA4BT 249 570 41 112 22 99,750 NOLZ 29 69 20 22 9 3,519 ROS Stailey, K5DJ DK3RA 205 511 50 108 37 99,645 KV4CN 29 76 13 23 6 3,192 S04 Dove Haven Drive JV3KSE 212 524 46 98 43 97,988 RA9FTM 47 132 5 19 0 3,168 504 Dove Haven Drive S04 Dove Haven Drive Round Rock, TX 78664-5926 <td>WB6BWZ WA2HFI</td> <td>246 231</td> <td>452 490</td> <td>47 51</td> <td>81 91</td> <td>102 66</td> <td>103,960 101,920</td> <td>6J3OYJ KE5OG</td> <td>56 62</td> <td>163 125</td> <td>20 20</td> <td>38 28</td> <td>3 21</td> <td>9,943 8,625</td> <td>WT4I</td> <td>Contest</td> <td>Tools \$4</td> <td>0 Ca</td> <td>brillo C</td> <td>Converte</td> <td>er \$20</td>	WB6BWZ WA2HFI	246 231	452 490	47 51	81 91	102 66	103,960 101,920	6J3OYJ KE5OG	56 62	163 125	20 20	38 28	3 21	9,943 8,625	WT4I	Contest	Tools \$4	0 Ca	brillo C	Converte	er \$20
AG4TJ 211 531 46 101 42 100,359 M3GOJ 45 108 13 29 9 5,508 EA4BT 249 570 41 112 22 99,750 N0LZ 29 69 20 22 9 3,519 DK3RA 205 511 50 108 37 99,645 KV4CN 29 76 13 23 6 3,192 IV3KSE 212 524 46 98 43 97,988 RA9FTM 47 132 5 19 0 3,168 504 Dove Haven Drive CT1BNW 215 531 41 98 43 95,580 N1EO 24 70 16 24 0 2,800 JF2IGP 210 605 41 81 31 92,565 D15CX 20 60 15 14 4 1,980 15,526 20 60 15 14 4 1,980 10,92,565 10,553 10,654,592,65 10,654,592,65 10,654,592,65 10,654,592,65 </td <td>SP2MKI</td> <td>220</td> <td>562</td> <td>41 49</td> <td>85 97</td> <td>54 28</td> <td>101,160</td> <td>JA1IZZ W2QQ</td> <td>53 50</td> <td>150 117</td> <td>18 15</td> <td>36 30</td> <td>0</td> <td>8,100</td> <td></td> <td>e-m</td> <td></td> <td></td> <td></td> <td>m</td> <td></td>	SP2MKI	220	562	41 49	85 97	54 28	101,160	JA1IZZ W2QQ	53 50	150 117	18 15	36 30	0	8,100		e-m				m	
CT1BNW 215 531 41 98 41 95,580 N1EO 24 70 16 24 0 2,800 Round Rock, TX 78664-5926	AG4TJ EA4BT	211 249	531 570	46 41	101 112	42 22 27	100,359 99,750	M3GOJ N0LZ	45 29	108 69	13 20	29	9 9	5,508 3,519							
31213F 210 003 41 81 31 32,303 DEJCA 20 00 13 14 4 1,500	IV3KSE CT1BNW	212 215	524 531	46 41	98 98	41	97,988 95,580	RA9FTM N1EO	47 24	132 70	16	24	0	3,168 2,800	Handwell Could		504 Dov	e Haven I	Drive		V/54
										60 57	15 13										

| OH5KUY | 157 | 362 | 16 | 44 | 10
 | 25,340 | UN4PD | 241 | 685
 | 24 | 58 | 23 | 71,925
 | OE1TKW | 72 | 204
 | 33 | 39 | 21 | 18,972
 |
|---|--|---|---|---
--	---	--	--
--	--	--	
--	---	--	
--	--		
OK1ACF TA1EQ UR5FCM	98 125 110	283 307 274	22 18 13
 | 23,206
20,876
17,810 | DL4JYT
DK2GZ
UA9FGJ | 280
244
219 | 650
572
622
 | 19
19
20 | 62
57
56 | 24
34
23 | 68,250
62,920
61,578
 | JJ1BDX/3 | 51 | 124
1-OPERATO
 | 27 | 30 | 14 | 8,804
 |
| CT2GRF
4J9NM
SP8MI | 100
124
73 | 239
357
201 | 14
6
11 | 39
32
27 | 18
0
18
 | 16,969
13,566
11,256 | JH1RFM
UR5ZMK
TA1DX | 213
207
296 | 598
519
639
 | 21
22
14 | 60
58
54 | 17
31
12 | 58,604
57,609
51,120
 | Call
HC8N
RU1A | QSOs
4576
3518 | Points
13609
8793
 | Zones Co
137
134 | ountries
381
399 | US/VE
264
211 | Final Score
10,642,238
6,541,992
 |
| EW6OO
LW5DR | 60
61 | 160
172 | 16
19 | 31
30 | 15
8
 | 9,920
9,804 | UA6ADC
DL6EDD | 218
202 | 477
478
 | 19
16 | 60
58 | 22
26 | 48,177
47,800
 | RW2F
KI1G | 3254
3131 | 8319
7895
 | 143
127 | 395
379 | 221
237 | 6,314,121
5,865,985
 |
| SP3PL
PY4PW
KG4FSN | 73
62
62 | 197
164
144 | 17
<i>15</i>
16 | 31
25
27 | 0
12
12
 | 9,456
8,528
7,920 | EA3AJW
RW3DIA
RA1OK | 214
246
199 | 486
526
440
 | <i>17</i>
11
19 | 58
52
55 | 18
17
17 | 45,198
42,080
40,040
 | 3Z7TTY
W5KFT
R04M | 2975
2555
2600 | 7645
5863
6059
 | 125
114
116 | 363
295
330 | 211
233
127 | 5,343,855
3,764,046
3.471,807
 |
| K80SF
JG3WCZ | 51
2 | 123
6 | 17
1 | 20 | 8
0
 | 5,535
18 | TA2FT
PY7XC | 210
152 | 597
451
 | 12
16 | 49
40 | 6
24 | 39,999
36,080
 | VE5RI | 1411 | 3647
 | 84 | 190 | 155 | 1,564,563
 |
| 9A5Y: 9A3N
OH0HEY: O | | | | | /HB, LT1D
 | : LU4DJC, | HP1KZ
DL9MBZ
I4D00 | 150
164
130 | 370
369
291
 | 11
17
16 | 34
49
54 | 32
11
14 | 28,490
28,413
24,444
 | UA1AKC, UA
WF1B, K1A | D, K6AW, AD
A1ARX, YUR
M; 3Z7TTY: S | I; RW2F: UA
P7GIQ, SP
 | 2FZ, UA2
7PS, SP5L | FF, UA2FE
JAF, SP5H | 3, RN2FA;
INK, SQ5B | KI1G: KI1G,
PM,
 |
| Call | S
QSOs | INGLE OPE
Pts. | RATOR 1 | 5 METERS | US/VE
 | Final Score | K1UG
W4XDX
SP3JHR | 107
111
123 | 245
227
260
 | 16
15
17 | 44
33
31 | 29
32
15 | 21,805
18,160
16,380
 | | 5KFT: K5PI, \
4HU, RW4LE
iSF. |
 | | | |
 |
| 9A5W
UX0FF
S55W | 1245
1192
1089 | 3260
3013
2846 | 37
33
36 | 106
100
98 | 56
55
55
 | 648,740
566,444
537,894 | YO4CVV
K0COP/4
SP7DQR/5 | 135
73
97 | 296
173
210
 | 7
12
8 | 43
34
37 | 3
18
2 | 15,688
11,072
9,870
 | M
Call | ULTI-OPERA
QSOs | TOR SING
 | LE TRANS | | IIGH POW | ER
Final Score
 |
| SP5GRM
T94MZ | 1008
978 | 2709
2512 | 36
33 | 102
92 | 56
54
 | 525,546
449,648 | JH2OJS
YO3III | 60
59 | 167
158
 | 19
14 | 31
25 | 8
20 | 9,686
9,322
 | HP1XVH
OM5M | 3127
2353 | 8235
6132
 | 127
130 | 353
361 | 249
206 | 6,003,315
4,274,004
 |
| DL4MCF
LV5V
W1AW | 971
883
1060 | 2494
2589
2677 | 32
31
30 | 92
91
85 | 56
51
48
 | 448,920
447,897
436,351 | VU3DJQ
EA4WC
K0SRW | 46
42
66 | 129
107
81
 | 12
10
9 | 32
20
8 | 1
11
25 | 5,805
4,387
3.402
 | RW9C
MW2I
W2FU | 2099
2365
2235 | 5991
5833
5722
 | 127
117
116 | 375
341
343 | 134
195
203 | 3,810,276
3,808,949
3,787,964
 |
| UK9AA
S51FB | 964
872 | 2698
2287 | 32
32 | 88
84 | 38
54
 | 426,284
388,790 | PA5PR
RK3DOV | 24
23 | 53
42
 | 7 4 | 19
17 | 2
0 | 1,484
882
 | OH5Z
UT9F | 2077
1883 | 5359
4544
 | 117
112 | 347
335 | 168
157 | 3,386,888
2,744,576
 |
| UA0CA
UT5UGR
JK3DGX/3 | 847
817
747 | 2331
2012
2103 | 29
34
31 | 83
94
88 | 50
46
47
 | 377,622
350,088
349,098 | E21EIC
RA4LK | 15
9 | 42
24
 | 10
7 | 10
8 | 0
1 | <i>840</i>
384
 | T77CD
OL5Q
W0DC | 2124
1776
1717 | 5456
4558
4121
 | 88
95
102 | 257
269
281 | 143
178
198 | 2,662,528
2,470,436
2,394,301
 |
| RU0AM
VR2BG
IK2FIL | 798
785
753 | 2198
2135
1970 | 28
32
32 | 82
74
83 | 45
51
54
 | 340,690
335,195
332,930 | CK6WQ: VE
SQ8GHY. | 6WQ, LP7H: | LU9HS, UV
 | '8M: UX3N | R, 7K4QO | K: JR2BN | IF, SP8KAF:
 | NONI
LRON
JJ3YBB | 1653
1573
1572 | 3946
4625
4468
 | 115
99
90 | 288
233
227 | 191
160
131 | 2,343,924
2,275,500
2,001,664
 |
| L44DX
GW4SKA
OH7N | 667
705
731 | 1956
1769
1818 | 29
30
29 | 77
83
81 | 50
52
46
 | 305,136
291,885
283,608 | Call
S50A | QSOs
710 | Points
1701
 | Zones Co
23 | | US/VE
49 | Final Score
243,243
 | OK1KSL
KJ7TH
TK/OM5RW | 1378
1524
/P 1563 | 3422
3585
3693
 | 100
99
87 | 296
222
269 | 146
176
126 | 1,854,724
1,781,745
1,780,026
 |
| JG1GGU
OZ9GA | 518
574 | 1464
1494 | 28
28 | 78
73 | 48
49
 | 225,456
224,100 | UT2II
IK1HXN | 552
484 | 1270
1110
 | 24
18 | 73
64 | 27
38 | 157,480
133,200
 | <i>KI5XP</i>
K7ZUM | 1333
1300 | 3213
3026
 | 99
89 | 266
202 | <i>168</i>
166 | 1,712,529
1,382,882
 |
| JR3RIY
CX4AAJ
RN6AL | 524
491
598 | 1479
1 <i>44</i> 9
1415 | 26
28
26 | 78
75
76 | 43
43
40
 | 217,413
211,554
200,930 | DF8QB
4Z8EE
UR5FFC | 503
384
382 | 1059
1123
802
 | 18
17
15 | 68
58
61 | 28
18
11 | 120,726
104,439
69,774
 | KE7AJ
OA4O
VE3FJB | 1188
961
909 | 2783
2832
2473
 | 88
70
72 | 199
163
200 | 145
126
90 | 1,202,256
1,016,688
895,226
 |
| LU8ADX
UT4EO | 440
517
478 | 1292
1211
1193 | 28
30 | 74
83 | 40
37
 | 183,464
181,650 | SP9ODY
UA3LID
T94DO | 351
275 | 745
596
 | 14
20
9 | 57
59
50 | 17
22 | 65,560
60,196
 | RK9JWZ
PA0VHA
VE7GL | 955
946 | 2655
2266
 | 72
61 | 214
176 | 49
96 | 889,425
754,578
 |
| SP8AQA
JE1GMM
5N0NHD | 408
453 | 1152
1359 | 28
30
19 | 77
76
62 | 44
44
36
 | 177,757
172,800
<i>159,003</i> | UA3RF
UR5NX | 308
276
273 | 646
567
574
 | 15
11 | 53
50 | 12
6
11 | 45,866
41,958
41,328
 | LW8EXF | 651
651 | 1742
1861
 | 65
64 | 136
166 | 96
42 | 517,374
506,192
 |
| JA2BY
HA3JB
VK2KM | 372
373
347 | 1068
943
1022 | 25
33
30 | 66
77
74 | 47
43
29
 | 147,384
144,279
135.926 | TA1GS
F5KSE
NT1V | 279
133
107 | 587
292
213
 | 12
10
15 | 52
39
35 | 3
17
30 | 39,329
19,272
17,040
 | OM2KW, OM | J7AA, DL4LQ
//4DW; RW90
/W5NF, G4V> | : UA9CGA,
 | RW9CF, I | RU9CK, R/ | A9DK; MW | 21:
 |
| JH3SIF
EC2AFA
OM1AXO | 333
475
390 | 928
1099
1019 | 27
22
21 | 73
55
56 | 35
34
42
 | 125,280
121,989
121,261 | JH1APZ
4Z8EE | 63
29 | 172
39
 | 19
6 | 24
6 | 11
20 | 9,288
1,248
 | N1OKL, K2Z
UR0FO, UT | S, N2OPW,
4FJ, UT0FT,
0DC: W0BV, | NG2P; OH5
UR5FEO, U
 | Z: OH5CW
T5UGW; C | /, OH5HCH
DL5Q: OK1 | K; UT9F: U
HRA, OK1 | T9FJ,
VSL,
 |
| ON4VV
RA3BT | 336
351 | 866
890 | 27
27 | 67
62 | 45
44
 | 120,374
118,370 | 4Z8EE: KI7T | |
 | | | |
 | WOOV, KOW
JA3PJL, JA3 | /HV, K0KD; L
BFHL, JH3FQ | R0N: LU2N
F, JS3VEX;
 | I, LU1NDC
KJ7TH: K | , LU8NA, I
J7TH, KW | LW7EIC; J.
7N; TK/OM | J3YBB:
5RW/P:
 |
| YB5QZ
YB0ECT
SM7JUR | 345
273
302 | 1018
806
750 | 25
30
26 | 76
71
68 | 13
23
35
 | 116,052
99,944
96,750 | Call
S57AW | QSOs
471 | Points
1007
 | Zones Co
15 | | US/VE | Final Score
99,693
 | AC7LX, KI7 | //3PC; KI5XP
/; KE7AJ: KE
FJB: VE3FJE | 7AJ, K7OX;
 | OA40: 0 | A4DJW, O | A4AHW, O | A4CZO,
 |
| W4LC
OH8MWD
DH5WB | 313
310
261 | 876
739
648 | 23
23
29 | 65
68
63 | 18
30
35
 | 92,856
89,419
82,296 | S54E
9A7R
OK2CLW | 383
403
333 | 823
829
653
 | 11
12
9 | 52
55
50 | 23
8 | 70,778
62,175
41,139
 | RK9JWZ: R | X9JM, UA9JI.
'GL, VE7TTC | J, UA9JLO,
 | UA9JMD; | PAOVHA: F | PAOVHA, P | A3BSQ;
 |
| YO8FZ
W6IWO | 290
283 | 693
651 | 27
20 | 69
53 | 21
38
 | 81,081
72,261 | SP7IIT
OK2ZC | 329
274 | 652
540
 | 8
8 | 48
45 | 5
6 | 39,772
31,860
 | M | ULTI-OPER# |
 | | | |
 |
| UA0CW | 212 | 611
601 | 27 | 68 | 23
 | | | 246 | 498
 | 6 | 42 | 0 | 23,904
 | Call | | Points
 | Zones Co | ountries | US/VE | Final Score
 |
| JA7DNO
EA6/DL8NB | 211
Y 243 | 575 | 23
20 | 59
58 | 29
 | 72,098
66,711
63,825 | T95A
UT0H
RK6BZ | 181
167 | 363
333
 | 9
7 | 40
40 | 3
0 | 18,876
15,651
 | HG1S
Z37M | QSOs
2062
2127 | 5371
5340
 | 121
101 | 334
312 | 189
185 | 3,458,924
3,193,320
 |
| EA6/DL8NB
AG4W
UW0F | Y 243
207
212 | 575
534
515 | 20
21
21 | 58
59
56 | 29
33
23
28
 | 66,711
63,825
55,002
54,075 | UT0H
RK6BZ | 181
167 | 363
333
 | 7
ERATOR A | 40
SSISTED | 0 | 15,651
 | HG1S
Z37M
KP2D
K1TTT | 2062
2127
1962
1664 | 5371
5340
5124
4108
 | 101
89
110 | 334
312
242
322 | 185
187
199 | 3,193,320
2,654,232
2,592,148
 |
| EA6/DL8NB
AG4W
UW0F
UA0FZ
YO2BEH
UR5QU | Y 243
207
212
196
195
166 | 575
534
515
543
456
408 | 20
21
21
20
19
26 | 58
59
56
59
54
63 | 29
33
23
28
12
27
20
 | 66,711
63,825
55,002
54,075
49,413
45,600
44,472 | UT0H
RK6BZ
Call
DL5AXX
JH4UYB | 181
167
QSOs
2212
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Final Score
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VK6GOM
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Vol. 50, No. 4

Dayton 2003 RTTY Schedule

Thursday, May 16, Evening — Casual RTTY get-together in the Howard Johnson bar and lounge. Location: Howard Johnson at 7575 Poe Avenue, Dayton, OH.

Saturday, May 17, 9:30 A.M. — RTTY Forum: Ten Sure Fire Ways to Improve QSO Counts in RTTY Contests. Hear from three top contesters who know how to get more QSOs in a RTTY contest. They have done it time and again. We plan to torture them into revealing the secrets of their high scores during the thirty minute tutorial from three top gun contesters: Don Hill, AA5AU; George Johnson, W1ZT, and Jay Townsend, WS7I. Location: Hara Arena.

Saturday, May 17, 7:00 P.M. — Join other RTTY enthusiasts at the annual dinner hosted by the RTTY Journal. Tickets are \$19.00

each, and may be purchased at the door. The menu: sliced roast beef, sliced baked ham, boneless chicken breast, stuffed baked manicotti, twice baked potatoes, green bean almondine, and Japanese vegetable blend. Drinks will also be available. Location: Howard Johnson at 7575 Poe Avenue, Dayton, OH.

Hamvention Schedule

Inside Exhibitors: Friday — 9:00 A.M. to 6:00 P.M. Saturday — 8:00 A.M. to 5:00 P.M. Saturday — 8:00 A.M. to 1:00 P.M.

Outside Vendors (Flea Market): Friday — 8:00 A.M. to 6:00 P.M. Saturday — 8:00 A.M. to 5:00 P.M. Sunday — 8:00 A.M. to 1:00 P.M.

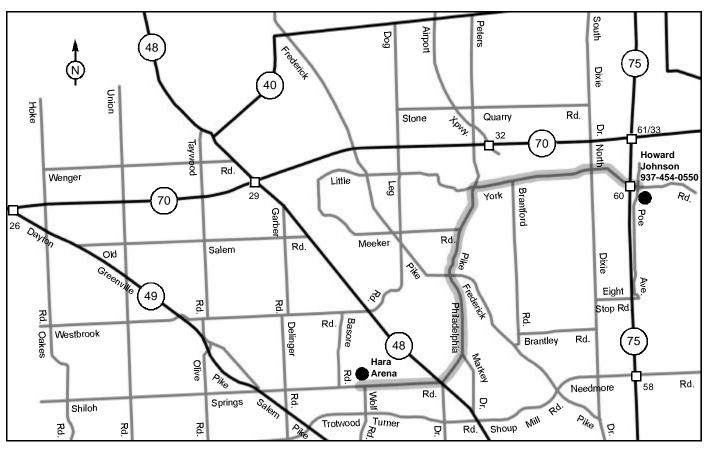
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Summer/Fall 2003 RTTY Contest Schedule

- Alessandro Volta RTTY DX May 10 to May 11
- Anatolian WW RTTY May 17 to May 18
- Great Lakes QSO Party May 31 to June 1
- ANARTS RTTY June 14 to June 15
- Spanish Islands (DIE) June 15
- ARRL Field Day June 28 to June 29
- DL-DX RTTY July 5 to July 6
- DARC 10m Digital "Corona" July 6
- Colombian Independence Day Contest July 19
- NCJ North American QSO Party July 19 to July 20
- Russian WW RTTY July 26 to July 27
- SARTG WW RTTY August 16 to August 17
- SCC RTTY Championship August 30 to August 31
- DARC 10m Digital "Corona" September 7
- CQ/RJ WW DX September 27 to September 28
- North American Sprint October 12
- JARTS WW RTTY
 October 18 to October 19

More contest information available at http://www.rttyjournal.com/contests

Contesting on the Go

Nick Smith, W4GKM

For sometime now I have wanted to operate from a different country during either a RTTY contest or just to give out some QSOs. However, it seems each time I try and schedule such an adventure something prevents such an occurrence. Last January I went on a 10 day cruise in the Caribbean and South America and packed all my equipment, and shipped it via the airlines with me. But as luck would have it, the airlines lost all my equipment but my luggage was sent to the ship. I had planned to operate from the ship for the 10 days at sea using a ship antenna. I had packed a couple of portable antennas just in case but of course that was all for naught. When I finally arrived back at Ft. Lauderdale the airline had found the large box of equipment and wanted a pat on the back, but didn't get one from me.

So work and other obligations have prevented me from doing a planned operation from another country. It finally occurred to me that I would have to plan this in more detail and take some vacation time off from work in order to be assured that the trip would go as intended. This year I planned to do just that and take some time off but so far had not decided when and where I would go. Since my work requires me to be on call and ready to go on a short notice I thought that getting ready for such an adventure would be difficult.

Recently, I received a call from our dispatcher advising me of a trip to Tegucigalpa, Honduras. I had planned to work the BARTG contest and really did not want to go but since it was a QTH that I had not been to, I really started thinking about some possibilities that just might work out.

The first thing I did was to check with the Honduran Telecommunications office to see if a license could be acquired in such a short time. The answer was yes and they said that they would have it waiting for me at my hotel. Wow, such nice people and very efficient. I was very impressed, to say the least. Now if I could just get my equipment together in time, everything would fall into place.

I put an MFJ switching power supply in my suitcase along with a few tools, a soldering gun and a few PL259 connectors — just in case. There was an old windom antenna in my work shop and I figured I could use that. I had used it for all bands several years ago and it seemed to work okay for that as long as I used a tuner. I found my old MFJ very light weight 941C tuner and put it in with the power supply. Now all I needed was some coax, which I found right away. It was only about 20 feet long, but I knew I would not need much as I planned to put the windom close to a window and use it as an inverted V. Next would be a transceiver and my Kenwood TS 450S fit the bill, so it went in the bag, too. My laptop had gone QRT so that meant I would have to borrow one or go buy another. I asked my son about his and he said okay. But I didn't have time to pick it up from him. You see, I fly for an air charter company and since this trip was to Honduras, I had to take a quick four hour course on terrorism.

So, during lunch I stopped by the Staples store picked up a nice laptop. But it didn't have a serial port. I then went up to Radio Shack and got an adapter USB to Serial. I had no idea whether this would work but I had packed my old PK232MBX and hoped it would be OK with this setup. When I arrived back at the office, I loaded Writelog on and was ready to go. My passengers were scheduled to arrive in about an hour and, so far, things seemed to be working out.

Since 9/11, when we leave the country we have to clear customs outbound as well as on the return. So we left Nashville and stopped at Mobile, AL, went through customs and finally we were on our way to Honduras. The flight was smooth and uneventful, and in 2 hours and 33 minutes we landed in Tegucigalpa. I had the Lear at only 37,000 feet but that seemed to be the best altitude for the fastest time. We were cruising around 500 knots most of the trip and were able to make a visual approach to the runway which, by the way, is not very long and is surrounded by mountains on all sides.

When I was with Eastern Airlines we went into many of the Central and South American cities. I was used to flying the B757 into them as I had done it many times. But that was a while ago and, going into a new airport made me and my 1st officer, Leo DeAngelo, pay close attention to what we were doing. I greased it on and went through customs with a breeze because our handler - Universal, out of Houston - takes care of all the details. Our ride to the hotel was quick and we checked to the Intercontinental. Soon I went to work getting ready for my new adventure of operating in a foreign country from a hotel room with limited equipment and antennas. (At home I have 11 antennas, three radios, two amps and three computers, so this was different.)

Leo and I had a quick lunch and soon I was back up to the 6th floor facing away from the busy streets down below, at work planning my antenna location. The window opened. Great! (In lots of hotels they're sealed shut.) Down below on the 2nd floor there was a tile roof that would be great for securing my antenna ends to make an inverted V. I was excited, but I had no way of getting on the roof. Time to call the manager, I thought, so I went down and asked if I could speak with him and he came right out. I explained what I wanted to do and he called his maintenance person and we went right to work on stringing wire from my room to the lower roof. I had brought a balun with me and put it at the apex location and so everything was in place now. These folks were really nice and helpful. I certainly was not expecting such cooperation and willingness to help.

Now came a few problems. The east side was completely blocked by the hotel, so I thought that might not work. I seemed to do better to the north but found it wasn't so bad in any direction. When the contest started I had a few problems with the radio not shutting off after it got through with transmitting a buffer. I thought at first it was the TNC, then the computer, but it turned out that I was getting RF in the radio and for some reason it would not stop transmitting on 14 and 75 meters. So I had to turn the power down (from 50 watts to 0) to get it to stop. On 15 and 10 it worked fine, but the SWR was very high on those bands and I had to use the tuner to get any power at all. I was able to get the SWR down to 1.5 to 1.0 on 15 and not near that on 10 meters. On 14 meters I had a 1:0 to 1:0 without the tuner but it would not stop transmitting unless I turned the power completely down to minimum. So when operating on 20 meters I would have to send a message, then grab the power and turn it down to listen for the reply. No problem. Just a nuisance.

I had a slow start and tried to see which band would be the easiest for me to begin on. I decided that 15 would be best but it soon went dead. 14 was very noisy and I couldn't understand why until I realized that the hotel was holding a wedding and had turned on lights right outside my window. On top of that, they were using lots of electrical equipment for musical instruments and a PA system. I called Leo and we went out to eat.

As we entered the restaurant, there was a big sign on the door that read, "No guns allowed." There were police inside and out. I figured if a gun fight broke out, I had my cover and a get away route and Leo did the same. We ate quickly and left. (It was hard to order because the servers spoke no English and we spoke no Spanish. Fortunately, they had pictures on the menu and I just pointed.) My dinner cost 292.00 lempurs, which is about \$12.00 U.S.

The next day, Saturday, I worked the contest on and off during the day and some that night. Sunday was about the same and I had a little run going there once, which was quite a thrill with 50 watts and a wire antenna hung out the window. I finally called in the dogs at about 7:30 and quit. I must say that Writelog worked as it always does for me, flawlessly and with ease.

This was a really fun contest, although I didn't make a high score or many contacts. Yet it seemed to redirect my thoughts about future contests and to help me be a better operator and contester. I must say it was the most fun I have had in a long time during a contest. Without all the help of Marco at the Telecommunications office and the hotel manager, I would not have been able to accomplish any of this.

I left the next day for Nashville and took off the next morning to Nassau, Bahamas, for five days. My equipment was already packed so I took it with me to see how it would work out in the Caribbean. There wasn't any contest but, since I already had a Bahamian license, I figured I'd just rag chew a little and try to enjoy that location, too. It really is a tough life but someone has to do it....hi hi.

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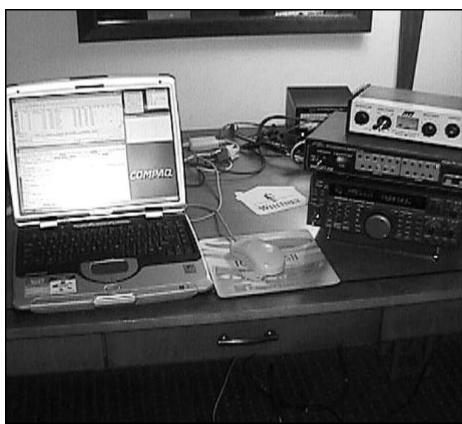
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'I made the first contest (non RTTY) with WriteLog, and it is FANTASTIC. It is such an improvement for me over CT... I really love it, and from now on anyone who operates from here will HAVE to use this program! I will twist their arms." — John, ON4UN





W4GKM/HR Station

RTTY Dictionary

Bill Henry, K9GWT k9gwt@rttyjournal.com

We in RTTY have devised a language all of our own. As our hobby has grown we've added new words, abbreviations, and acronyms to our discussions. Interest in amateur RTTY is growing and we add new enthusiasts every year. Here is hopefully some help for old and new RTTY'ers.

AFSK: Audio Frequency Shift Keying. One audio tone represents the MARK state and a different audio frequency represents the SPACE state.

AMTOR: AMateur Teleprinter Over Radio. The error-correcting code and ARQ protocol used by radio amateurs. Same as SITOR except that certain features such as Selective Forward Error Correction (SFEC) are not included. Also, AMTOR includes a LISTEN mode that is not supported by either TOR or SITOR. Modifications of CCIR-476 SITOR first described by Peter Martinez, G3PLX in 1980.

ARQ: Automatic Repeat reQuest. A radio protocol that can sense receive errors and the receiver may then request that the transmitting station repeat transmission of flawed data bits, bytes, or characters. This is generally a chirp or burst type of two-way emission, one station to a second station. Typical ARQ modes are TOR, SITOR, AMTOR, AX.25 Packet Radio, Pactor, CLOVER, and G-TOR.

ASCII RTTY: American National Standard for Communications Information Interchange. The standard 8-bit data code used for computer data. Often pronounced "as-key". Normally transmitted via radio using simple two-tone frequency shift keying (FSK) or audio frequency shift keying (AFSK) modulation.

ASM: Amplitude Shift Modulation used in CLOVER. Amplitude levels are shifted to send data. For example, 2A mode has two levels and sends information for 1 data bit; 4A sends data for 2 data bits. In CLOVER, 8P2A mode sends information for 4 data bits and 16P4A sends data for 6 data bits.

Asynchronous: A sequential (serial) data bit format that includes a control "Start Bit" to signal the beginning of the data character and a "Stop Bit" to signal the end of the character. The bits sent between the Start and Stop bits represent the data. In common amateur use, the Baudot code has one start bit, 5 data bits, and one or more stop bits.

AX.25: First offered by Tucson Amateur Packet Radio (TAPR) club in 1982. Based on the commercial X.25 protocol but tailored for VHF/UHF amateur radio use. Terminal Node Controller (TNC) offered AX.25 error correction protocol and FSK modem for 300 and 1200 baud operation. The 1200 baud option is used with VHF FM equipment and has enjoyed strong popularity. 300 baud FSK has been used on HF radio with limited success.

Baudot RTTY: The five-level code commonly used by radio amateurs for HF radio communications. The actual code used today most closely follows that devised by Murray but "Baudot" is the common name. Also known as CCIR / ITA #2 code. Since the 5-unit code has only 32 (2⁵) combinations, code combinations must be used twice to represent all 26 letters, 10 numbers and assorted symbols. Special case-control characters — LTRS and FIGS — are sent to signal a case change to the receiving device. Normally transmitted via radio using simple two-tone frequency shift keying (FSK) or audio frequency shift keying (AFSK) modulation.

Baud: The signaling rate in "Baud" (named after Baudot). Baud is the reciprocal of the time width of shortest pulse in the data stream. Baud = 1/T. Common baud rates for HF RTTY are 45.45, 50, 57, 75, 100,and 110 Baud. Common VHF/UHF rates are 300, 1200, 2400, 4800, 9,600, and 19,200 Baud.

Bias Distortion: Distortion that increases the time length of one state at the expense of the other. For example, if all Space pulses are 10% longer than normal and all Mark pulses are 10% shorter than normal. May be caused by incorrectly tuned radio receiver or by interference. In a loop circuit, may be caused by a loop voltage that is too low.

Bit Error Rate (BER): A performance test that may be performed on a demodulator. In its simplest form, a "BERT" (Bit Error Rate Tester) mixes a RTTY signal of known amplitude with a random noise source. The S/N (Signal/Noise) ratio is varied and a tally is made of the number of bit errors found on the demodulator data output. The BER is lowest for high S/N (strong signal) and highest for low S/N (weak signal). The lower the BER, the less the distortion caused by the demodulator and the better the reception A good 45 baud RTTY demodulator may have a BER of the order of 1 error bit per 100,000 bits at a S/N of 0 dB or lower.

Bit-rate: The rate at which bits are sent, measured in bits-per-second. In a simple two-tone FSK or AFSK modulation, one bit is sent per Mark or Space pulse and the bit rate and baud are the same. In the case of complex modulation such as CLOVER, more than one bit may be sent per tone pulse. For example, in CLOVER QPSM mode, the phase may be set to 0, 90, 180, or 270 degrees on each tone pulse. Thus 4 data states or the information in two binary bits may be sent with each CLOVER tone pulse. In CLOVER-II QPSM mode, the signaling rate is 31.25 baud but the data rate is 62.5 bits-per-second.

BMUNS: "Broad Minds Use Narrow Shift" — an acronym to remind hams to use narrow shift on HF RTTY. Coined by Dusty Dunn, editor of the RTTY Journal (1967 - 1977).

B/Y: Mark/Space bit states of a TOR, SITOR, or AMTOR data signal.

Characteristic Distortion: Repetitive and consistent distortion of one or more bit elements of a signal. For example, a start bit that was noticeably shorter or longer than the following data bits.

CLOVER: An error-correction protocol and waveform invented by Ray Petit, W7GHM, and sold by HAL Communications Corp. Uses Reed-Solomon error-correction coding and selective block repeat ARQ. CLOVER-II has a 500 Hz bandwidth and will pass data at rates up to 70 bytes/second (560 bits/sec). CLOVER-2000 has a 2000 Hz bandwidth and will pass error-corrected data at rates up to 250 bytes/sec (2000 bits/sec). Four audio tones, spaced 125 Hz apart are used in CLOVER-II; CLOVER-2000 uses 8 tones, spaced 250 Hz apart. Both CLOVER-II and CLOVER-2000 provide five modulation levels that use Phase Shift Modulation (PSM) and Audio Shift Modulation (ASM). Modulation levels are automatically adjusted to fit measured received signal conditions. The base symbol rate of CLOVER-II is 31.25 baud; of CLOVER-2000, 62.5 baud. **Code:** The method used to represent letters, numbers, and symbols by a sequence of bits. Common amateur radio digital codes include Baudot, ASCII, and Morse codes.

Data Bits: The Mark or Space pulses that follow the start bit. All are one unit bit period long, the same time length as the start bit. Five data bits are sent in the Baudot code and 8 bits in the ASCII code.

Demodulator: The device that accepts audio data from the receiver output, detects the Mark and Space signals, and passes a digital pulse stream to the terminal device — PC or teleprinter.

Duplex: In an ARQ communications system, use of different radio frequencies for reception and transmission. Normally used for ship-to-shore ARQ (TOR) communications.

EOL: End Of Line sequence. For amateur Baudot RTTY, the correct end of line sequence should be CR LF LTRS. For MARS circuits, send CR LF. For ASCII, send CR LF.

FDX: Full duplex. Communications between two stations pass simultaneously in both directions. Requires two radio frequency links for RTTY.

FEC: Forward Error Correction. A mode often included in an ARQ modem. This is a "broadcast mode" in which one station may send data to several other stations. Error detection coding is used and the data may be sent multiple times, the receiver choosing which received version is correct. This may not result in error-free and/or gap-free data transmission but is useful when a one-to-many mode is required.

FIGS: The special Baudot character sent to signal the receiving device that the following characters are figures and not letters.

Flat Fading: A signal amplitude change on an FSK signal that has equal (or near equal) affect on the amplitude of both the Mark and Space FSK signals. A good receiver AGC system will usually compensate for this form of amplitude change.

Fortuitous Distortion: A random "jitter" of the Mark/Space transition time. Maybe caused by defective sending equipment (dirty contacts), clock frequency instability, or random noise.

Free Signal: Alternate Mark/Space (B/Y) bit sequence sent by shore stations using TOR. Signals to ship stations that the coast station and frequency channel are available to link and pass traffic. Usually sent in 2 to 5 second bursts of B/Y followed by CW identification of the shore station.

FSK: Frequency Shift Keying: One radio frequency represents the MARK state and a different radio frequency represents the SPACE state.

G-TOR: An error-correction protocol invented by Phil Anderson, W0XI, and sold by the Kantronics company. Uses Golay error-correction coding and 300 baud FSK modulation.

HDX: Half duplex. Communications between two stations pass one direction at a time. Stations take turns sending. Some ARQ systems such as AMTOR and Pactor require an "OVER" command to change the direction of data flow. Other systems such as AX.25 and CLOVER do not require a special command to change direction.

HERE IS: A pre-programmed identification message that can be sent

manually or automatically. May also be called "Answer-back Message".

High Tones: RTTY modem tones used in the United States: Mark = 2125 Hz; Space (170) = 2295 Hz, Space (425) = 2250 Hz, Space (850) = 2975 Hz.

Ionosphere Simulator: Test equipment that simulates the distortion and signal variations that can be caused by ionospheric propagation. A typical simulator output may include multi-path time-smearing distortion, selective fading, flat fading, and Doppler frequency shifts, all at varying S/N levels. The BER vs S/N is tallied for each of these conditions; a low BER at low S/N ratios is the goal.

IRS: Information Receiving Station. In TOR, SITOR, AMTOR, and Pactor, the ARQ station that is receiving information from the other station. May be either the Master or Slave station, depending upon the use of the OVER command. Does not apply to CLOVER as either station may send at any time and OVER is not required.

ISS: Information Sending Station. In TOR, SITOR, AMTOR, and Pactor, the ARQ station that is sending information to the other station. May be either the Master or Slave station, depending upon the use of the OVER command. Does not apply to CLOVER as either station may send at any time and OVER is not required.

Line Length: 72 characters for normal amateur Baudot RTTY; 69 characters for MARS Baudot RTTY, 80 characters for ASCII and most computer applications.

Loop: The original serial data voltage and current interface. All data equipment is wired in a series connection (the RTTY "loop"). The current in the loop is set to a standard value, 60 ma and 20 ma being common values. The voltage generator in the loop circuit is usually a high voltage power supply; 60V, 100V, 150V, and 200V supplies are common.

Low Tones: RTTY modem tones used outside the United States: Mark = 1275 Hz; Space (170) = 1445 Hz, Space (425) = 1700 Hz, Space (850) = 2125 Hz.

LTRS: The special Baudot character sent to signal the receiving device that the following characters are letters and not figures characters.

LSMFT: "Low Space Means Fine Teletype" — an acronym to remind hams about the correct Mark/Space polarity to use on HF RTTY. Coined by Dusty Dunn, editor of the RTTY Journal (1967 - 1977).

Marine Tones: RTTY modem tones used for TOR and SITOR; Mark (B) = 1615 Hz; Space (Y) = 1785 Hz.

MARK: "ON" state of a RTTY data signal; the "1" logical state of the digital RTTY signal; the "rest" state on a mechanical teleprinter.

Master: In TOR, SITOR, AMTOR, and Pactor, the ARQ station that makes the original call and initiates the data link connection. The Master station sets the timing for both stations. The originating station remains "Master" for the duration of the ARQ link regardless of the use of the OVER command.

MCP: ARRL acronym for "Multi-mode Communications Processor" (also known as "TNC").

MIL-188C: A Military data voltage and control protocol. Mark = +6V, Space = -6V. Data Connectors are not standardized. Also called "MIL-188-114".

MODEM: Acronym to describe the RTTY MOdulator-DEModulator.

Modulator: The device that accepts digital data from the terminal device and converts it into an FSK or AFSK signal where one signal frequency is sent to represent the Mark data state and another frequency to represent the Space state.

Multi-path Distortion: Distortion caused by splitting of the radio signal into two or more rays, each taking a different path to the receiver. This can be caused on HF signals by ionospheric propagation or by reflection from large buildings in a large city for VHF and UHF signals. In either case, multiple signal components that travel different path lengths arrive at the receiving antenna and are summed vectorially. Due to the difference in path lengths, the Mark/Space transition times are different and when the components are summed, the transition is smeared, making exact determination of bit timing difficult or impossible. Multi-path propagation may also cause cancellation of one radio frequency of an FSK signal, leading to selective fading.

Narrow Shift: Commonly accepted to be 170 Hz for radio amateur use, but 85 and 42.5 Hz have also been used in military FSK applications.

NBDPT: Narrow Bandwidth Direct Printing Telegraph

Neutral Loop: A loop circuit in which the loop current is keyed ON/OFF by the data signal. The polarity standard is that Mark = loop current ON and Space = loop current off (open circuit). Typical neutral loops use +100 to +200V @ 20 ma or 60 ma.

OVER: In TOR, SITOR, AMTOR, and Pactor, the command that causes the direction of data flow to reverse. When sent and acknowledged, the former Information Sending Station (ISS) becomes the Information Receiving Station (IRS) and vice-versa. This does not affect Master/Slave status that remains fixed for the duration of the ARQ link. Does not apply to CLOVER as either station may send at any time without the use of OVER.

Pactor: An error-correction protocol invented by the SCS firm in Germany. This protocol is a cross between CCIR-476 and AX.25, including features of each. The symbol rate may be 100 or 200 baud. Uses Huffman error-correction coding. Three versions have been offered by SCS: Pactor-I, Pactor-II, and Pactor-III, each providing faster data throughput than its predecessor. Two-tone FSK modulation is used for Pactor-I, and multi-tone PSK for Pactor-II and Pactor-III. Also called "P-Mode".

Polarity: The MARK and SPACE sense of the signal. On HF radio teletype, "normal polarity" is when the MARK radio frequency is higher than the SPACE radio frequency. For AFSK systems used for VHF/UHF and with HF SSB equipment, normal polarity is when MARK has the lower audio tone frequency and SPACE has the higher audio tone frequency. Either RTTY polarity is "legal" but common practice is to observe these standards. Note that when AFSK tones with normal polarity (MARK = low) are applied to the audio input of an SSB transmitter set to lower sideband (LSB), the radio frequency order is reversed and this inverts the RTTY signal to match the HF polarity standard (MARK = higher radio frequency).

Polar Loop: A loop circuit in which the loop current is keyed from positive to negative by the data signal. Either polarity may be used but Mark = + current is more common. The typical polar loop power supply furnishes +60V or -60V @ 20 ma or 60 ma.

PSM: Phase Shift Modulation used in CLOVER. Similar to PSK but uses amplitude controlled pulse shapes so that data state changes occur only at zero-amplitude of the waveform, preventing wide bandwidth switching transients.

PSK: Phase Shift Keying. Data is sent by changing the phase of the radio or audio signal. May be used for multi-level signaling — BPSK for 1 bit, QPSK for 2 bits, 8PSK for 3 bits, 16PSK for 4 bits. Requires wide bandwidth due to switching transients. Used by Pactor.

QBF: Test message that sends each letter in the alphabet. Most common format is "THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 0123456789".

RATT: RAdio TeleType — the military version of "RTTY".

RS-232: The data voltage and control protocol used by most computers for serial data. Mark = -25 to -3 V and Space = +3 to +25V. The normal data connectors are the DB-25 and DE-9, but the RJ-45 is also used. The current standard is called "TIA/EIA-232F"

RTTY: Radio TeleTYpe — what we hams call the mode

RTTY FSK Tone Frequencies: By common practice, RTTY audio filters and tones are usually set to odd multiples of 85 Hz. This evolved from use of a 425 Hz tuning fork as the frequency standard in the 1940s and 1950s. For example: USA high tones: 2125 = 85x25, 2295 = 85x27 etc.

RYRYRY...: Test sequence that sends alternate Mark/Space bit patterns in the Baudot code. R = (01010), Y = (10101).

SEL-CAL: Selective Call. A unique identification character sequence whereby the receiving station will only respond if the message includes the station SEL-CAL at the start. Used with Baudot RTTY, TOR, SITOR, Pactor, CLOVER, and G-TOR.

Selective Fading: The signal distortion condition in which multi-path propagation causes cancellation of one FSK signal frequency without affecting the other. A selective fade may be very deep, the amplitude change often exceeding 60 dB in depth from the normal level. Such fades are usually of short duration but long enough to obscure one or more bits of RTTY data, particularly at high rates. Normal receiver AGC will not compensate for the effects of selective fading. Hard-limiting "FM" demodulators and AM demodulators that have very wide dynamic-range detectors may offset the effects of selective fading.

In addition, demodulators that have automatic "Mark-only" and "Space-only" detection will provide superior protection against selective fading.

SFEC: Selective FEC. This is a broadcast mode that can be customized to send a message only to a selected group of receiving stations. This mode is included in TOR and SITOR but not in other ARQ protocols.

SHIFT: The frequency difference between the MARK and SPACE frequencies. Applies to either FSK or AFSK modulation.

Simplex: In an ARQ communications system, the use of the same radio frequencies for reception and transmission. Used for amateur communications on RTTY and ARQ modes.

SITOR: SImplex Teleprinter Over Radio. The error-correcting code and ARQ protocol used for ship-to-shore radio teletype. Same as TOR except that the transmit and receive radio frequencies are the same rather than split as for TOR.

Slave: In TOR, SITOR, AMTOR, and Pactor, the ARQ station that is called and links to the Master station. All link timing is synchronized to the Master station's signal.

SPACE: The "OFF" state of a RTTY data signal; the "0" logical state of the digital RTTY signal; the "pulse" or "open" state on a mechanical teleprinter.

Speed: The average Baudot speed at which characters can be printed in words per minute. Common Baudot speeds used by amateurs are 60 wpm, 67 wpm, 75 wpm, and 100 wpm.

Start Bit: The control bit in a serial asynchronous data stream that signals the start of a character. On a normal Baudot or ASCII data circuit, the data line is in the Mark or "rest" state when data is not being sent. When data is sent, the start of the character is signaled when the data line transitions from Mark to Space and remains in Space condition for one unit pulse time. Data bits follow the completion of the start bit.

Stop Bit: The control bit in a serial asynchronous data stream that signals the end of a character. In a normal Baudot or ASCII serial data stream, upon completion of the last data bit, the data line is set to the Mark state and remains in Mark for the duration of the stop pulse. The stop pulse length is not standard. It may be the same length as the unit pulse or longer. Common stop pulse lengths are : 1.0 unit (300 baud and higher ASCII), 1.43 units (standard 45.45 baud Baudot, 1.5 units (Western Union 50 baud), 2.0 units, or longer. Note that any stop pulse length greater than 1.0 unit is valid. If only one character is sent, the stop pulse length is essentially infinite. All asynchronous receiving devices should be able to synchronize with and decode data streams using different stop pulse lengths.

Synchronous: A sequential (serial) data bit format that does not include control start or stop bits. Special bit sequences are sent to synchronize the transmitter and receiver devices. AMTOR, AX.25, and CLOVER use synchronous data streams.

Sync Idle: Synchronous Idle, also called "diddle". In Baudot RTTY, characters are sent as typed. If the typist is slow and has not pre-typed text into a buffer, the transmitted data will be sent in a "jerky", start-stop manner, with Mark-state pauses between each data burst. Sync Idle sense when typed input is slower than the output rate and automatically inserts non-printing characters to fill the gap. The "blank" character (00000) is usually sent to fill these gaps but LTRS (11111) has also been used. Use of Sync Idle on an HF RTTY link may result in remarkably improved reception.

Throughput: A measure of the actual rate of information transfer that includes all overhead. For example, the symbol rate of CLOVER-2000 is 62.5 Baud and the maximum bit rate is 3000 bits-per-second. However, because of the use of error correction coding, and the time that the transmitter must pause for acknowledgement from the receiver, the actual measured data throughput is 2000 bits-per-second.

Throughput is easily computed by timing how many characters, bytes, or bits are passed error-free in a fixed time interval.

TNC: Terminal Node Controller. The name originally given to the modem and data processing device used for AX.25 Packet Radio. However, most AX.25 TNC's include RTTY and other data modes. By popular use, "TNC" often refers to a RTTY modem device.

TOR: Teleprinter Over Radio. The error-correcting code and ARQ protocol used for ship-to-shore radio teletype. Also called "NBDPT" in US Federal Communications Commission (FCC) regulations. Uses a special 7-bit error correction code that allows each receive character to be inspected and re-transmitted if a parity error is detected. Full details of the coding and protocol are given in CCIR 476 and CCIR 625 documents. Normally transmitted via radio using simple two-tone frequency shift keying (FSK) or audio frequency shift keying (AFSK) modulation. The symbol rate is 100 baud and the FSK signal has 170 Hz shift. Normal AFSK modem tone frequencies are 1615 Hz and 1785 Hz, (170 Hz shift, centered at 1700 Hz). The transmit and receiver radio frequencies are split by 400 to 800 kHz.

TU: Terminal Unit — original name for the RTTY demodulator and modulator.

 $U^*U^*U^*...$: Test sequence that sends alternate Mark/Space bit patterns in the ASCII code. U = (1010101), * = (0101010).

Unit Pulse: The basic minimum width pulse in the serial data stream. The width is always equal to the reciprocal of the Baud rate. The start and data pulses always have a time duration equal to one unit pulse. For example, 50 baud => 20 ms unit pulse.

USOS: UnShift On Space. When receiving Baudot RTTY, noise may accidentally be interpreted as the Baudot FIGS character. If so, all following characters will be displayed in the FIGS case until a LTRS character is decoded. USOS causes the receive printer/terminal to change to LTRS case after reception of a space character. This reduces the problem.

Wide Shift: A shift that is greater than 170 Hz. 850 Hz and 425 Hz shifts are the most commonly used wide FSK shifts for commercial and government applications.

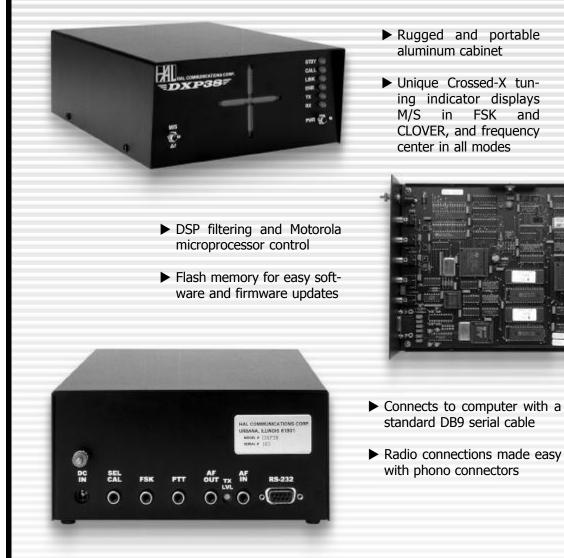
WRU: Who aRe yoU. A control/command character or sequence of characters that can be sent from one RTTY station to another. Upon reception of the WRU character(s), the receiving station changes to transmit, sends the pre-programmed HERE IS message, and returns to receive state. Optional and rarely used with Baudot RTTY, but standard for advanced ARQ modes such as Pactor and CLOVER.

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