Instructions for Software/Data on Accompanying CD-ROM for 21st Edition of *The ARRL Antenna Book*

The companion CD-ROM for the 21st Edition of *The ARRL Antenna Book* includes software associated with several areas of the book (to find the programs in the book itself, look in the index under "Programs:").

INSTALLING THE PROGRAMS/DATA

Please use the *Install.exe* program on this disk to install the files and programs to your hard disk. Normally, *Install.exe* will start automatically when you place the CD-ROM in your computer, but you can also start it manually. From the Windows desktop (assuming your CD-ROM drive is D:), at the Windows Taskbar on the bottom left of the screen, click **Start**, select **Run**, type in (or **Browse** to find) **Install.exe**, click on **OK** and then follow the on-screen instructions.

Note that some operating systems may not respond to the selection of "Restart" at the end of the installation routine for *EZNEC ARRL* or *MicroDEM*. (In fact, some operating systems won't even show the form where you can specify rebooting.) It is best not to select restart, but to reboot your system manually at the end of the whole installation.

PLACING ICONS ON YOUR DESKTOP

At the last step of the installation you will probably click on the option to install icons for most of the ARRL programs on your desktop. This places icons on the desktop for *HFTA*, *TLW*, *YW*, *Range-Bearing*, *EZNEC ARRL* and *MicroDEM*, if you have chosen to install those programs.

If you have changed the default directory for *MicroDEM*, you will need to find the **microdem.exe** executable file and right-click on it in order to put an icon on your Desktop. Then click **Send To** the **Desktop (create shortcut)**.

SUBDIRECTORIES

Although you may override it, the default subdirectory *AB21Install.exe* creates on your hard drive is **C:\Program Files\ARRL\AntBk21**, with 7 subdirectories beneath it:

\Antenna Tuners
\EME & Satellite
\General
\Modeling
\Terrain
\XmsnLines
\Yagis

Listed below are short descriptions of the files in each subdirectory.

IN THE C:\Program Files\ARRL\AntBk21*Antenna Tuners* SUBDIRECTORY:

The *AAT* program automatically evaluates antenna tuner networks over a very wide range of load impedances. You can use a word processing program to read the three sample output ASCII files created by *AAT*. See Chapter 25 for more information on *AAT* and see **AAT.pdf** for detailed instructions.

IN THE C:\Program Files\ARRL\AntBk21\EME & Satellite SUBDIRECTORY:

K5OE1_MMDS.pdf — "A Helix Feed for Surplus MMDS Antennas" by Gerald R. Brown, K5OE.
K5OE_2_foot_mods.pdf — "2 Foot MMDS Dish Modification" by Gerald R. Brown, K5OE
K5OE_DualBandPatch.pdf — "Build This No-Tune Dual-Band Feed for Mode L/S" by Gerald R. Brown, K5OE.
SatFreqGuide0303.pdf — "Amateur Satellite Frequency Guide" by AMSAT.
W0LMD Dish Feed Systems.pdf — "Dish Feed Systems" by Robert Suding, W0LMD.

IN THE C:\Program Files\ARRL\AntBk21*General* SUBDIRECTORY:

ANTPLNR.pdf — "Antenna Height and Communications Effectiveness" by Dean Straw, N6BV, and Gerald L. Hall, K1TD. This article may help you during Planning Commission or Zoning Board of Appeals meetings to convince town/city officials about your antenna needs.

EFFLEN.FOR is described in Chapter 2. This is an ASCII Fortran file that illustrates the principle behind the Schelkunoff tapering algorithm. This converts a tapered element into a single "monotaper" that can be modeled with a method-of-moments program like *NEC-2* or its derivatives.

GAMMA.BAS is described in Chapter 25. It is an ASCII text file that can be run in QBASIC or GWBASIC to compute the parameters for a gamma match. *GAMMA.EXE* is a compiled, executable file you can run from the DOS prompt or in a DOS Window.

MOBILE.EXE is described in Chapter 6. This is a terrific DOS program by Leon Braskamp, AA6GL, for evaluating and designing mobile whip antennas and the coils used for loading these short antennas.

LPCAD30.EXE is described in Chapter 10. Roger Cox, WBØDGF, wrote this DOS program for computing LPDA designs.

Range-Bearing computes the range/bearing from one latitude/longitude point to another. It also computes the latitude/longitude of a second point, given the range/bearing from the first point. *Range-Bearing* can be used in conjunction with a mapping program such as *Google Earth* to create terrain plots that the *HFTA* program can use.

Arrayfeed1 by W7EL computes parameters necessary for feeding 2-element and 4-element phased-arrays. *Arrayfeed1* is described in Chapter 8.

IN THE C:\Program Files\ARRL\AntBk21*Modeling* SUBDIRECTORY:

This subdirectory contains *EZNEC* data files for antenna designs utilized in a number of chapters in the printed book. These modeling data files will work with *EZNEC ARRL* (also included with the CD-ROM), provided that the number of segments is less than 500. They will also work with the standard version of *EZNEC 4.0*. See the file **Readme_EZNEC ARRL.pdf** for further details.

Very complex models (such as some of the stacked VHF/UHF models in Chapter 18, for example) are also provided for completeness, but they must be run using the professional version of *EZNEC*, *EZNEC Pro*, which is not included with *The ARRL Antenna Book*. *EZNEC Pro* can be purchased from Roy Lewallen, W7EL.

IN THE C:\Program Files\ARRL\AntBk21*Terrain* SUBDIRECTORY:

This subdirectory contains the *HFTA* (HF Terrain Assessment) program by Editor Dean Straw, N6BV, and sample terrain data for evaluating the effect of uneven local terrain on the launch of HF signals throughout the world. See **HFTA.PDF** documentation file on disk or use the Help button in *HFTA* itself. The program *HFTA* is described in detail in Chapter 3.

During the installation process you will be asked to specify the region where you live so that appropriate statistical elevation-angle files can be installed along with *HFTA*. (The default files installed cover a number of locations throughout the USA. You can add files from other locations throughout the world.) The statistical elevation angles are computed for the full 11-year solar cycle from transmitting sites indicated by the filename.

MAKEVOA.EXE is also included in this subdirectory. This program takes the OUT.PRN file generated by *HFTA* and creates an antenna file compatible with *VOACAP*. See the **HFTA.pdf** documentation file for details.

IN THE C:\Program Files\ARRL\AntBk21\Xmsn*Line* SUBDIRECTORY:

This subdirectory contains files for *TLW* (Transmission Line for Windows) program by Editor Dean Straw, N6BV. This is described in Chapter 24. *TLW* computes many parameters for transmission lines and antenna-tuners—including detailed losses and stresses. *TLW* runs under Windows 98, XP, XP Professional, NT or 2000. The documentation file **TLW.pdf** is also located in this subdirectory, or you can open it from inside *TLW* by clicking on the **Help** button.

IN THE C:\Program Files\ARRL\AntBk21*Yagis* SUBDIRECTORY:

This archive contains the *YW* (Yagi for Windows) program by Editor Dean Straw, N6BV, plus 80 optimized Yagi antenna designs. See **YW.pdf** for documentation or click on the Help button in *YW*. *YW* is described in Chapter 11.

SCALE.EXE is a DOS program from scaling Yagi files to other frequencies or other element-taper schedules. See **SCALE.pdf** for details.

PROPAGATION-PREDICTION FILES

Located on the CD-ROM itself are a huge number of propagation-prediction files.

Choices, Summary and Detailed Propagation Tables

USA
W1B Boston, MA
W2A Albany, NY
W2N NYC, NY
W3D Washington, DC
W4A Montgomery, AL
W4F Miami, FL
W4G Atlanta, GA
W4K Louisville, KY
W4N Raleigh, NC
W4T Memphis, TN
W5A Little Rock, AR
W5H Houston, TX
W5L New Orleans, LA
W5M Jackson, MS
W5N Albuquerque, NM
W5O Oklahoma City, OK
W5T Dallas, TX
W6L Los Angeles, CA
W6S San Francisco, CA
W7A Phoenix, AZ
W7I Boise, ID
W7M Helena, MT
W7N Las Vegas, NV
W7O Portland, OR
W7U Salt Lake City, UT
W7W Seattle, WA
W7Y Cheyenne, WY
W8M Detroit, MI
W8O Cincinnati, OH
W8W Charleston, WV
W9C Chicago, IL
W9I Indianapolis, IN
W9W Milwaukee, WI
WØC Denver, CO
WØD Bismarck, ND
WØI Kansas City, MO
WØK Middle of US, KS
WØM St. Louis, MO
WØN Omaha, NE
WØS Pierre, SD

Other, North America
6Y Kingston, Jamaica
8P Bridgetown, Barbados
HP Panama City, Panama
KL7 Anchorage, Alaska
KP2 Virgin Islands
TI San Jose, Costa Rica
V3 Belmopan, Belize
VE1 Halifax, Nova Scotia
VE2 Montreal, Quebec
VE3 Toronto, Ontario
VE4 Winnipeg, Manitoba
VE5 Regina, Saskatchewan
VE6 Edmonton, Alberta
VE7 Vancouver, BC
VE8 Yellowknife, NWT
VO1 St. John's, NFL
VP2 Anguilla
VP5 Turks & Caicos
XE1 Mexico City, Mexico

Europe
CT Lisbon, Portugal
DL Bonn, Germany
EA Madrid, Spain
EI Dublin, Ireland
ER Kishinev, Moldava
F Paris, France
G London, England
I Rome, Italy
JW Svalbard
OH Helsinki, Finland
OK Prague, Czech Republic
ON Brussels, Belgium
OZ Copenhagen, Denmark
SV Athens, Greece
TF Reykjavik, Iceland
UA3 Moscow, Russia
UA6 Rostov, Russia
UR Kiev, Ukraine
YO Bucharest, Romania
YU Belgrade, Yugoslavia

South America
CE Santiago, Chile
CP La Paz, Bolivia
FY Cayenne, French Guiana
HC Quito, Ecuador
HC8 Galapagos Islands
HK Bogota, Columbia
LU Buenos Aires, Argentina
OA Lima, Peru
P4 Aruba
PY1 Rio de Janeiro, Brazil
PY0 Fernando de Noronha
YV Caracas, Venezuela
YV0 Aves Island
ZP Asuncion, Paraguay

Asia
1S Spratly Islands
3W Ho Chi Minh City, Vietnam
4J Baku, Azerbaijan
4S Columbo, Sri Lanka
4X Jerusalem, Israel
9N Katmandu, Nepal
A6 Dubai, UAE
AP Karachi, Pakistan
BY1 Beijing, China
BY4 Shanghai, China
BY0 Lhasa, China
HS Bangkok, Thailand
HZ Riyadh, Saudi Arabia
JA1 Tokyo, Japan
JA3 Osaka, Japan
JA8 Sapporo, Japan
JT Ulan Bator, Mongolia
TA Ankara, Turkey
UA9 Perm, Russia
UA0 Khabarovsk, Russia
UN Alma-Ata, Kazakh
VR2 Hong Kong
VU New Delhi, India
VU7 Andaman Islands
XZ Rangoon, Myanmar

Oceania
3D2 Fiji Islands
DU Manila, Philippines
FO Tahiti
H4 Honiara, Solomon Islands
JD1 Ogasawara Island
KH0 Saipan, Mariana Islands
KH5K Kingman Reef
KH6 Honolulu, Hawaii
KH8 American Samoa
V7 Kwajalein, Marshall Islands
VK2 Sydney, Australia
VK6 Perth, Australia
VK8 Darwin, Australia
YB Jakarta, Indonesia
ZL1 Aukland, New Zealand
ZL3 Christchurch, New Zealand

Africa
3B9 Rodrigues
3C Bata, Equatorial Guinea
3V Tunis, Tunisia
5N Lagos, Nigeria
5R Antananarivo, Madagascar
5U Niamey, Niger Republic
5Z Nairobi, Kenya
6W Dakar, Senegal
7Q Lolongwe, Malawi
7X Algiers, Algeria
9J Lusaka, Zambia
9L Freetown, Sierra Leone
9X Kigali, Rwanda
C9 Maputo, Mozambique
CN Casablanca, Morroco
CT3 Madeira Islands
D2 Luanda, Angola
EA8 Canary Islands
IG9 Lampedusa, Italy
J2 Djibouti
ST Khartoum, Sudan
SU Cairo, Egypt
VQ9 Chagos, Diego Garcia
XT Burkina Faso
ZS1 Capetown, So. Africa
ZS6 Johannesburg, So. Africa

These PDF files contain propagation prediction tables valid from the transmitting site indicated in the filename to seven generalized receiving locations throughout the world in the

Summary Tables and for the 40 CQ Zones in the Detailed Tables. The user selects a single transmitting site closest to his/her location. You can access this data by opening *Adobe Acrobat Reader* and selecting **Prop Index.pdf**. Or you can operate from the main table of contents in the left pane of the opening window.

Each transmitting location is organized by five levels of solar activity over the whole 11-year solar cycle:

VL (Very Low: SSN between 0 to 20)
LO (Low: SSN between 20 to 40)
ME (Medium: SSN between 40 to 60)
HI (High: SSN between 60 to 100)
VH (Very High: SSN between 100 to 150)
UH (Ultra High: SSN greater than 150)

The seven generalized locations throughout the world for the Summary Tables are:

EU = Europe (all of Europe)
FE = Far East (centered on Tokyo, Japan)
SA = South America (centered on Asuncion, Paraguay)
AF = Africa (centered on Lusaka, Zambia)
AS = southern Asia (centered on New Delhi, India)
OC = Oceania (centered on Sydney, Australia)
NA = North America (all of USA).

Both types of propagation files show the highest predicted signal strength (in S-units) throughout the generalized receiving area, for a 1500-W transmitter and rather good antennas on both sides of the circuit. The standard antennas are 100-foot high inverted-V dipoles for 80 and 40 meters, a 3-element Yagi at 100 feet for 20 meters, and a 4-element Yagi at 60 feet for 15 and 10 meters. Discount the S-Meter readings in the tables to represent a smaller station:

Subtract 2 S units for a dipole instead of a Yagi
Subtract 3 S units for a dipole at 50 feet instead of a Yagi at 100 feet
Subtract 1 S unit for a dipole at 50 feet rather than a dipole at 100 feet
Subtract 3 S units for 100 W rather than 1500 W.
Subtract 6 S units for 5 W rather than 1500 W.

Shown below is an image of a Summary Table printout from Boston to the rest of the world, for Very High solar activity in January. This table could be used, for example, to help plan which bands to operate when on a DXpedition to some exotic location.

The Detailed Table printout from Boston to the rest of the world on 20 meters for January from Boston during a Very High level of the solar cycle is shown on the following page. It shows the predicted signal strength in each of the 40 CQ Zones around the world. Note that long-path openings are predicted by an asterisk appended to the end of the predicted signal strength.

Also located on the CD-ROM in the \Propagation subdirectory is the **Fig6Tab.pdf** file described in Chapter 3 of the printed book. This set of tables shows the hours open to each of 10 regions throughout the USA for Very-Low/Medium/Very-High levels of SSN.

Jan., MA (Boston), for SSN = Very High, Sigs in S-Units. By N6BV, ARRL.

	80 Meters							40 Meters							20 Meters							15 Meters							10 Meters							
UTC	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	UTC
0	9+	-	9+	9+	8	-	9+	9+	5	9+	9+	9	-	9+	1	9+	9+	9+	9+	9	9+	-	9	9+	2	2	9+	9+	-	1	8	-	-	8	9+	0
1	9+	-	9+	9+	8	-	9+	9+	4	9+	9+	9	2	9+	1	9	9+	8	9+	9+	9+	-	3	9	-	7	9+	9	-	-	-	-	-	4	2	1
2	9+	-	9+	9+	7	-	9+	9+	4	9+	9+	9	7	9+	1	9	9+	8	9	9+	9+	-	-	3	-	-	7	9	-	-	-	-	-	-	2	2
3	9+	-	9+	9+	1	2	9+	9+	4	9+	9+	9	9	9+	-	7	9+	7	8	9+	9	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3
4	9+	-	9+	9+	-	7	9+	9+	5	9+	9+	8	9	9+	-	5	9+	9	9	9	9+	-	-	1	-	-	-	-	-	-	-	-	-	-	2	4
5	9+	-	9+	9+	-	8	9+	9+	6	9+	9+	7	9	9+	-	5	9+	9	9	5	9+	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5
6	9+	-	9+	9+	-	8	9+	9+	7	9+	9+	7	9	9+	-	8	9+	8	9	5	9+	-	-	-	-	-	-	-	-	-	-	-	-	-	2	6
7	9+	-	9+	9+	-	8	9+	9	8	9+	9+	7	9+	9+	-	9	9+	-	7	9	9+	-	-	1	-	-	-	-	-	-	-	-	-	-	2	7
8	9	7	9+	9	-	8	9+	9	8	9+	9+	8	9+	9+	-	9	9+	-	4	9+	9+	-	-	1	-	-	-	2	-	-	-	-	-	-	2	8
9	8	7	9+	7	-	8	9+	9	9	9+	9	8	9+	9+	-	6	9+	-	1	9+	9+	-	-	-	-	-	-	1	-	-	-	-	-	-	2	9
10	5	8	9+	2	3	8	9+	9	9	9+	8	8	9	9+	4	-	9+	9+	1	5	9	-	-	-	-	-	-	-	-	-	-	-	-	-	2	10
11	1	8	9+	-	4	9	9+	8	9	9+	5	8	9	9+	9+	4*	9+	9+	7	-	8	-	-	9	9	-	-	-	-	-	-	-	-	-	2	11
12	-	7	8	-	1	9	9+	6	9	9+	1	8	9	9+	9+	9	9+	9	9	1*	9+	9	8*	9+	9+	9	5*	-	-	2*	9	9	1	1*	2	12
13	-	-	-	-	-	2	9+	4	8	8	-	7	9	9+	9+	9	9+	9	9	9+	9+	9+	7	9+	9+	9+	3*	9	9	5*	9+	9+	9	6*	2	13
14	-	-	-	-	-	-	9+	2	7	4	-	5	8	9+	9+	9	9+	8	9	9	9+	9+	9	9+	9+	9+	9	9+	9	6*	9+	9+	9	1*	1	14
15	-	-	-	-	-	-	9	1	5	-	-	4	5	9+	9+	9	9+	9	9	9	9+	9+	9+	9+	9+	9+	9	9+	9	5	9+	9+	6	6	8	15
16	-	-	-	-	-	-	8	3	4	-	-	3	1	9+	9+	8	9	9	9	9	9+	9+	9+	9+	9+	9	9+	9+	9	8	9+	9+	-	8	9	16
17	-	-	-	-	-	-	8	5	3	-	2	4	-	9+	9+	8	9+	9+	9	9	9+	9+	9	9+	9+	1*	9+	9+	-	8	9+	9+	-	8	9+	17
18	-	-	-	-	-	-	9	7	4	2	5	5	-	9+	9+	9	9+	9+	9	9	9+	9+	9	9+	9+	1	9+	9+	-	7	9+	9+	-	9+	9+	18
19	1	-	-	1	-	-	9+	8	5	6	8	7	-	9+	9+	9	9+	9+	9	9	9+	-	9+	9+	9+	2	9	9+	-	6	9+	9+	-	9+	9+	19
20	4	-	2	5	-	-	9+	9	6	9	9	8	-	9+	9+	9	9+	9+	9	9	9+	-	8	9+	9+	3	9	9+	-	1	9+	9	-	9	9+	20
21	7	-	8	7	1	-	9+	9+	7	9+	9+	8	1	9+	8	9	9+	9+	9	9	9+	-	6	9+	9+	3	9	9+	-	-	9+	5*	-	9+	9+	21
22	9	2	9+	9	8	-	9+	9+	7	9+	9+	9	4	9+	2	9+	9+	9+	9	9	9+	-	9+	9+	9	1	9+	9+	-	5	9+	4*	-	9	6	22
23	9	-	9+	9	8	-	9+	9+	7	9+	9+	9	-	9+	1	9+	9+	9+	9	9	9+	-	9+	9+	6	-	9	9+	-	7	9+	2*	-	9	2	23
	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	EU	FE	SA	AF	AS	OC	NA	

Sample Summary Propagation-Prediction Table, January from Boston to the World.

20 Meters: Jan., MA (Boston), for SSN = Very High, Sigs in S-Units. By N6BV, ARRL.

		UTC -->																						
Zone		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
KL7 = 01		9+	9+	9+	7	-	-	-	-	-	-	-	-	-	-	-	3	9+	9+	9+	9+	9+	9+	9+	9+
VO2 = 02		9+	9	9	9	9	9	8	7	5	3	2	1	5	9+	9+	9+	9+	9+	9+	9+	9+	9+	8	9+
W6 =	03	9+	9+	9+	7	7	1	1	5	8	8	3	-	-	1	9	9+	9+	9+	9+	9	9	9+	9+	9+
W0 =	04	9+	9+	9+	8	5	5	5	5	3	2	1	-	-	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+
W3 =	05	4	2	2	2	2	2	2	3	3	3	3	2	1	1	8	9+	9+	9+	9+	9+	9+	9+	9+	9
XE1 = 06		9+	9+	7	9	9+	9+	9+	9+	9+	9+	9	8	9+	9+	9+	9+	9	9	9	9	9+	9+	9+	9+
TI =	07	9+	9+	8	9	9	9	9	9	9	9+	9	9+	9+	9+	9+	9+	9	8	9	9	9+	9+	9+	9+
VP2 = 08		9+	9+	9+	9+	9+	9+	9+	9+	9+	8	9	9+	9+	9+	9+	9+	9	9+	9+	9+	9+	9+	9+	9+
P4 =	09	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	9	9	9	9	9+	9+	9+	9+	9+
HC =	10	9+	8	9+	9	9	9	9	9	7	3	1	7	9+	9+	9	5	5	5	7	8	9+	9+	9+	9+
PY1 = 11		9+	9+	9+	9	9	9+	9+	9	8	6	9	9+	8	2	1	-	-	1	4	8	9	9+	9+	9+
CE =	12	9+	9+	9+	9+	9+	9+	9+	9+	9	8	8	9+	9	8	2	1	1	-	1	3	7	9	9+	9+
LU =	13	9+	9+	9+	9+	9+	9+	9+	9+	8	8	8	9+	8	4	2	1	-	-	1	4	8	9	9+	9+
G =	14	-	-	-	-	-	-	-	-	-	-	-	9+	9+	9+	9+	9+	9+	9+	9+	9+	9+	8	2	-
I =	15	-	-	-	-	-	-	-	-	-	-	4	9	9	9	9	9	9	9+	9+	9	8	2	-	-
UA3 = 16		1	1	1	-	-	-	-	-	-	-	-	8	9	9+	9+	9+	9	8	5	-	-	-	-	1
UN =	17	1	-	-	8	7	7	7	1	-	-	-	2	9	9	9	6	-	-	2	4	8	9	5	4
UA9 = 18		6	7	6	6	9	9	9	7	4	1	-	-	8	8	6	6	5	6	7	8	9	9	8	7
UA0 = 19		9+	9	9	6	5	5	8	8	8	4	-	-	2	6	8	8	8	7	4	4	7	9	9+	9+
4X =	20	8	6	3	1	-	3	4	-	-	-	1	8	8	8	8	8	9	9	9+	9	9	8	7	7
HZ =	21	9+	9	4	3	8	8	2	-	-	-	1	7	8	9	8	8	9	9	9	9	9	9	9	9
VU =	22	7	5	8	7	6	7	5	-	-	-	-	6	9	9	9	9	3	2	2	2	8	8	9	8
JT =	23	9	9+	9	5	7	8	8	6	3	-	-	2*	8	8	5	6	8	8	8	8	9	7	5	6
VS6 = 24		9	9	9	5	4	5	7	8	6	1	-	1*	5	7	1	1	1	1	4	2	-	-	-	9
JA1 = 25		9	9	8	7	5	5	8	9	9	6	-	1	1	2	7	7	6	2	-	-	7	9	9+	9
HS =	26	9	9	6	4	2	-	-	2	1	-	-	2*	9	9	9	9	8	7	5	4	5	-	1*	1
DU =	27	9	8	7	-	-	-	5	7	7	1	-	-	1*	9	9	7	6	4	5	3	1*	1*	8	9
YB =	28	9	8	1	-	-	-	-	-	-	-	-	4*	8	9	9	9	8	8	9	9	9	9	9+	9+
VK6 = 29		3*	4*	-	-	-	-	-	-	5	3	-	-	-	5	9	9	9	8	9	9	9	9	9	8
VK3 = 30		1*	-	-	-	-	-	1	3	9	9	4	-	-	9+	9	8	2	1	-	-	1	2*	5*	4*
KH6 = 31		9	9+	9+	9+	8	2	2	6	4	-	-	-	-	-	-	-	9	9	8	7	6	4	6	7
KH8 = 32		-	2	9	9	9	5	5	9	9+	9+	5	-	-	9+	9	9	8	5	3	1	-	-	-	-
CN =	33	-	-	-	-	-	-	-	-	-	-	9	9+	9	9	8	9	9	9+	9+	9+	9+	9+	9+	7
SU =	34	9	8	3	3	-	1	4	-	-	-	2	7	8	8	8	8	9	9	9+	9+	9+	9+	8	8
6W =	35	9+	8	-	-	2	7	5	-	-	-	9+	9+	8	5	4	3	7	9	9+	9+	9+	9+	9+	9+
D2 =	36	9+	9+	5	3	9	9	8	-	-	-	3	-	-	-	-	4	4	7	8	9	9+	9+	9+	9+
5Z =	37	9+	9	2	4	8	8	1	-	-	-	2	-	-	3	5	5	7	8	9	9	9+	9+	9+	9+
ZS6 = 38		9+	9+	8	7	8	9	6	-	-	-	-	-	-	-	1*	1	2	6	8	9	9+	9+	9+	9+
FR =	39	9+	8	2	1	4	1	-	-	-	-	-	-	-	2*	3*	1*	1	3	8	9	9+	9+	9+	9+
FJL = 40		9+	9+	7	4	7	8	7	1	-	-	-	1*	8	9	9	9	9	9	9	9	9+	9+	9+	9+
Zone		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
		UTC -->																							

Expected signal levels using 1500 W and 3-element Yagis at 100 feet at each station.

Sample Detailed Propagation Table for 20 Meters, January, Boston to World for Very High SSN.

Enjoy the software. We would appreciate any feedback or bug reports you might have.

73,

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