

DX-ing and Contesting from a small garden

by

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Topics to be Discussed

- Antennas and ATUs
- Power
- Modes and Frequencies
- Noise
- DX-ing
- Contesting

Antennas

- Antennas are the biggest limitation of operating from a small garden.
- My garden is approximately triangular and 12m wide by 16m long.
- Most urban gardens do not allow for a rotatable antenna on HF.
- Keeping antennas discrete/hidden will cause less problems with neighbours, planning permissions etc.
- Many traditional antenna designs either do not work or are very poor performers when surrounded by trees, houses etc.
- Use insulated wire for safety reasons, but it may affect dipole tuning.

Antenna Types 1

- 1 Balanced Antennas
 - a. Dipoles and slopers and nested versions of both
 - b. Doublets – centre fed antenna, fed with open wire line or ribbon feeder – a personal favourite used on SOTA and holiday activations
- 2. Loops
 - a. Small loops as demonstrated by M0RTP a few meetings ago
 - b. Using the MFJ range of loop tuners – coverage depends on wire length but can give up to 2x range i.e. 10 to 20 MHz on single loop
 - c. Large loops, Delta loops or my own design that works 10-30 MHz but requires an ATU to match it to 50 ohms, like most multi-band loops.

Antenna Types 2

- 3. Verticals

- a. Lots of commercial types available
- b. Most need radials, often many for each band covered
- c. Some use a tuned stub at the base which really acts like a dipole. The disadvantage is this spiky base element has lots of volts on it, as has the vertical itself, lots of safety issues here!
- d. Most do not work well ground mounted and surrounded by houses, fences and trees
- e. if you can get it up in the clear with a few radials, verticals will work and give low angle radiation = more DX

Antenna Types 3

- 4. Various mini HF beams including nested dipoles or 2 element beams such as the various types of spider beam. Small rotating radius but likely to be very visible to neighbours though not as unsightly as conventional beam antennas.
- 5. All sorts of end fed wire arrangements.
 - a. Simple long piece of wire tuned at the Transmitter end with ATU
 - b. Windoms of various types e.g. Carolina Windom
 - c. End fed half-wave which may cover multiple harmonically related bands and with ATU, multiple bands.

Antenna Tuners - Manual

- Lots of Commercial Manual types available:
- a. simple L-match with variable capacitor that can be switched from one end to the other of a variable inductor to give low or high impedance matches
- b. Pi type circuits with capacitors to ground at both ends of serial inductor. Can cover large range of impedances and gives good harmonic rejection.
- c. T-Match (Trans-match) using serial variable capacitors connected to one end of a variable inductor (often a roller type) with the other end to ground. These give very large range of impedance matching but not good harmonic rejection

Antenna Tuners - Automatic

- Most of the configurations listed earlier are available as automatic ATUs but the main types use a serial variable inductor and a variable capacitor to ground that can be auto switched to either end of the inductor.
- These ATUs use a small internal microprocessor to switch various capacitors and inductors in and out of circuit until the best match is achieved.
- Many modern transceivers have internal ATUs but some e.g. Yaesu and Icom only cover a small range of impedances. I have found that those from Elecraft and Flex match a much larger range. My MFJ 993B and LDG AT200 external ATUs will match a large range of impedances very quickly.

Power

- 1. Run as little as possible to get reasonable number of QSOs.
- 2. Running full legal limit in close proximity to other houses will almost always cause problems.
- 3. QRP is fine but requires dedication to get good results without large antennas, however at the right time anywhere can be worked.
- 4. Above 50 MHz even quite low power can cause blocking to digital terrestrial TV, especially where wideband masthead preamps or household distribution amplifiers are being used.

Modes

- Which mode works best for Dx-ing with low power or small antennas?
- 10 years ago I would have said CW, CW, CW!
- Now modern digital modes have probably surpassed CW as the best mode for working DX, but if you want to chat are limited. PSK modes offer a level of chat and use pre-programmed macros.
- SSB can be hard work if you are not a big signal.
- For any digital modes beware of trying to run your full power, your PA, ATU and antennas may not survive! Most are not rated for longish transmit periods at 100%!

Frequencies

- The LF bands, 160 and 80 metres, are a struggle with small antennas but with patience some DX can be worked.
- 40 metres through to 17 metres offer the best chances from year to year.
- In years with good sunspot numbers 15, 12 and 10 metres give very good results and even a small garden can house a competitive antenna. Cubical Quad antennas for 12,10 and 6 metres are quite small and very effective radiators with good directivity.

Noise

- The big enemy in an urban environment is NOISE!
- Sources include :-
 - 1. Switching mode PSUs especially so called wall warts.
 - 2. Compact Fluorescent Lamps (CFL) and LED lights.
 - 3. Solar panel systems – power convertors and controllers.
 - 4. Almost anything with a computer in it.
 - 5. Chargers for all manner of battery equipment, this will get worse as the number of electric cars being charged increases.

DX-ing 1

- The key to working DX is to listen more than you transmit!
- Work out where the station is listening – co-channel or split
- A second receiver helps here but looking at the waterfall display often shows where people are calling.
- TX watch (TXW) enables you to listen on the VFO that you will transmit with for a few seconds after the DX stops transmitting to find who he is working.
- If he is listening on his TX frequency on CW, try calling a few hertz higher or lower, you will sound different to other people calling.

DX-ing 2

- Try to operate at different times of day or night.
- Get used to which bands are open, when and to where.
- Stations that are hard to work on one band may be easier on another band. Your antennas may favour different directions on each band, especially for longwire antennas used on multiple bands.
- If you cannot put up many antennas, try concentrating on a couple of bands for a while. You can always swap antennas at a later stage.
- Not all QSOs need to be 59(9) TU! I like to send my name to stations that are not in a hurry and chat where possible.



Contesting 1

- 1. Many contests give you a chance to work countries that are not regularly on the air.
- 2. If you want to be competitive try to pick a section where you could do well. I often try to operate mixed CW and phone in contests where it is allowed as many serious CW or phone operators stick to their favourite mode.
- 3. Almost all my contesting these days is in the “Low Power” 100W sections though I occasionally use QRP (10w or 5W depending on the rules)

Contesting 2

- 4. Conventional wisdom is to “run” in a contest but with limitations on antennas and power this is often counter-productive.
- 5. Search and Pounce means you can pick up lots of multipliers that may not have called your small signal when you are calling “CQ test”
- 6. Make sure you know the scoring system and multipliers
- 7. Try to set yourself a target – number of QSOs, points, countries, QSOs per hour.
- 8 Get to know your contest logging program N1MM+ or SD on HF or Minos on VHF are my preferences.
- 9. Above all enjoy it, it is supposed to be for fun!

Filter Options:

Country Status: Mode: Commonwealth: ☐Print Export 

Bands	Total	Previous	Period
160m	53	53	40
80m	102	102	31
60m	27	27	0
40m	141	140	45
30m	132	131	39
20m	192	189	72
17m	180	180	48
15m	187	187	64
12m	177	174	46
10m	182	181	43
6m	68	68	23
4m	10	9	4
2m	8	8	1
70cm	4	4	0

	Total	Previous	Period
6 Band	237 857	236 852	100 295
WARC Band	223 489	223 485	77 133
9 Band	256 1346	256 1337	110 428
VHF Band	68 90	68 89	23 28
10 Band	256 1414	256 1405	110 451

G4DDL LOTW

DXCC Award	New LoTW QSLs	LoTW QSLs in Process	DXCC Credits Awarded	Total (All)	Total (Current)
Mixed *	0	0	241	241	238
CW *	2	0	234	236	233
Phone *	0	0	140	140	140
Digital *	4	0	131	135	134
160M	0	0	51	51	51
80M	0	0	98	98	97
40M *	1	0	127	128	126
30M *	3	0	112	115	114
20M *	1	0	168	169	168
17M *	1	0	155	156	156
15M *	2	0	164	166	165
12M *	3	0	155	158	158
10M *	0	0	156	156	156
6M	0	0	62	62	62
2M	0	0	3	3	3
70CM	0	0	1	1	1
Challenge *	11	0	1242	---	1253


Filter Options:

Country Status:

Mode:

Commonwealth: ☐

Print 

Export 

Bands	Total	Previous	Period
160m	33	33	0
80m	50	50	9
60m	9	9	0
40m	72	72	17
30m			
20m	113	112	36
17m	63	63	7
15m	125	125	17
12m	54	54	2
10m	130	130	8
6m	48	48	4
4m	5	5	1
2m	8	8	1
70cm	4	4	0

	Total	Previous	Period
6 Band	169 523	168 522	53 87
WARC Band	85 117	85 117	9 9
9 Band	173 640	172 639	55 96
VHF Band	49 65	49 65	4 6
10 Band	173 688	172 687	55 100

Log4OM – DXCC 2022

 Awards status

Award **DXCC** **DXCC**  Import data

Award view	Award filters	Statistics	Maintenance	Massive editor
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