VK3 ANNUAL SOTA CONFERENCE
11TH FEBRUARY 2017

Venue: The Club Rooms of the Moorabbin and District Radio Club,
31 Turner Road, Highett

9:30 AM until 3:30 PM
BBQ Lunch

PROGRAM:

9:30 AM	**Welcoming coffee and tea**
10:00 AM	**Opening, welcome and announcements**
10:05 AM	**From the MT. Andrew VK3ARR**
10:30 AM	**2016: The SOTA year in review. Wayne VK3WAM**
11:00 AM	**160 m and other portable antenna: Peter VK3YE**
11:30 AM	**Review of the KX2. Glen VK3YY**
12:00 Noon	**VK port-a-log. Peter VK3ZPF**
12:30 PM	**40 m is not working, again. Peter VK3PF**
1:30 PM	**BBQ LUNCH.**
2:00 PM	**Show and Tell. Attendees open their rucksacks to reveal some desirable toys and answer the hard questions.**
3:00 PM	**Conference closure**
3:15 PM	**Last Coffees**
4:00 PM	**Venue Closed**

All Day: Free tea, coffee. Can of soft drink, small gold coin.
Also available at the venue, 2 man tents, instant erect, stay dry and warm.
Used at one jamboree, from Murray VK3MJT at $15 each.
Squid poles $45 from Ken VK3KIM.

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All talks to be published (pending on receipt of material from presenters) on line in a Conference Proceedings/Compilation

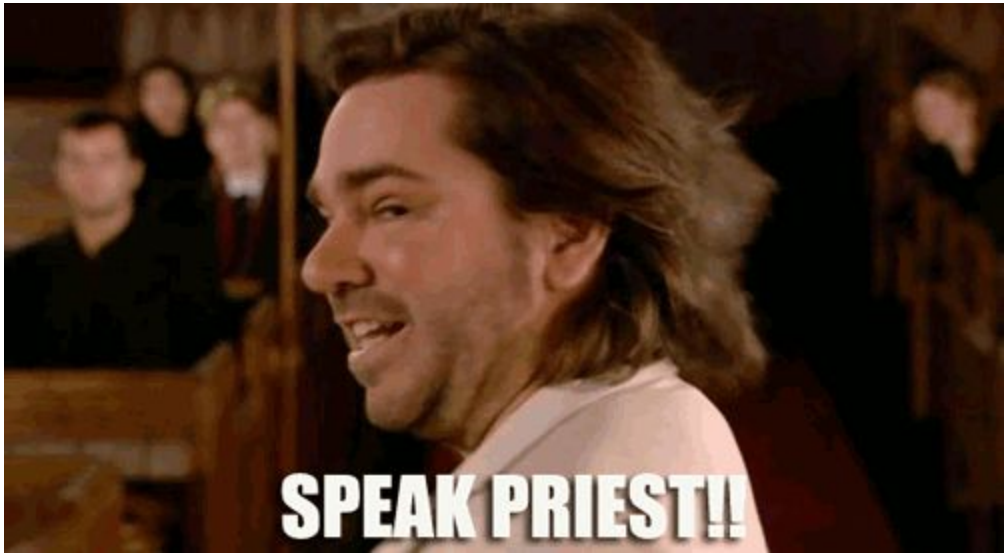
For more information contact Ron VK3AFW – vk3afw@optusnet.com.au

SPONSORED BY THE M&DRC

For info about the Club check out the last APC News newsletter.
https://mdrc.org.au/files/newsletter/2016/november-december-248.pdf

From the SOTA MT

Andrew Ryan
VK3ARR
SOTA MT


SPEAK PRIEST!!

The SOTA MT

- SOTA was created by John Linville G3WGV, now ex-officio SOTA MT benevolent leader for life.
  - A management team (the MT) handles the decisions on the direction of SOTA, in conjunction with John and his original vision
- Primarily UK based, but we’re expanding
  - Elliott K6EL and Guy N7UN in the NA, and myself and Warren ZL2AJ in APAC
- We’re an interesting mix of teachers, lawyers, astronomers, RF engineers and IT folks

SOTA today

- 122 Associations
- 985 Regions
- 104,771 Summits (24,658 activated - 23.5%)
- Summits that run from 180 W to 180 E, 60 N (and higher) to 60 S, every continent but Antarctica

SOTA in Asia-Pacific

- First Eastern Hemisphere association was HL in 2010 with 2,456 summits
- First VK association in 2012 with VK3 and then VK5.
- Now: 20,082 summits across 22 associations
  - JA: 7106
  - VK: 4945
  - ZL: 5211
  - 9V: 1

The MT in review: 2016

- Added new MT members: Warren ZL2AJ, Cristophe ON4UP, Guy N7UN
- SOTA Sherpa: Andrew Moseley VK1AD
- Begun computerised review process for VK associations
  - VK7 first to be updated (101 new summits!)
  - VK3 in the hands of Wayne
  - Parts of VK2/5 analysed, others to come
- New associations in Asia:
  - ZL3 (3,920 summits), FK (347 summits)
- Updates in Asia:
  - JA (1,222 summits), JA5 (197), JA6 (336), JA8 (75), VK7 (101), ZL1 (3), ZL9 (4)

2017: What's coming

- Lots of new associations, hopefully. Some examples (no guarantees!)
  - Preliminary analysis shows 50,000 new summits at least in South America
  - 3,300 in Nepal to be checked
- New challenge?
  - Lots of discussion, nothing satisfactory as yet
  - Happy with the existing '4 weekends' arrangement (Cycling, AM, Lightweight, S2S, etc)
- Single Sign On!
  - When I pull my finger out and install and configure it and the rest of the systems are configured to use it
- More publicity / transparency
  - Of SOTA, and
  - MT activities


ANY QUESTIONS
DO YOU HAVE?
memegenerator.net

SOTA Conference 2017

Five years in review

11 Feb 2017

Wayne VK3WAM

Five years of SOTA in VK

- VK3 First on 1 Feb 2012, VK5 next, 1 Oct 2012
- VK1 on 1 Feb 2013, VK9 on 1 May 2013
- VK2 and VK4 on 1 Sept 2013
- VK8 on 1 Mar 2014, VK6 on 1 Sept 2014
- VK7 on 1 Oct 2014
- VK0 on ☺

Anyone interested in SOTA?

	2012	2013	2014	2015	2016
Activator points	1,249	6,717	11,473	11,795	10,162
Activators	19	95	126	139	110
Activations	212	1,479	2,323	2,284	1,969
Activations per activator	11.16	15.57	18.44	16.43	17.90

Anyone interested in SOTA?

	2012	2013	2014	2015	2016
Logged chasers	40	137	193	190	168
Chaser points	4,155	77,706	160,877	119,625	78,580
CW activator points	169	415	2,854	2,573	1,930
CW activations	28	82	272	460	393
CW activations per activator	5.6	7.45	14.32	17.69	15.72

Anyone interested in SOTA?

Chaser points	2012	2013	2014	2015	2016
80m	14	3	3	338	1237
40m	3,918	72,485	140,226	104,946	61,251
30m	0	247	1,731	680	354
20m	34	1,859	14,952	7,286	5,213
17m	0	21	236	175	1,640
15m	8	41	335	1065	2,395
12m	0	421	958	20	26
10m	0	28	147	2,254	2,176
6m	0	22	84	868	5,43
2m	221	3,117	1,824	2,405	4,077
70cm	1	14	94	77	358
23cm	0	0	0*	1	20

VK3

- Started on 1 Feb 2012 with 609 summits
- Today is 628 summits – small adjustments
- 399 of these have been activated once or more (9 new ones in 2016), 229 never been activated
- 327 activated at least twice (up 19 in 2016)
- Most popular summit: Mt Donna Buang VK3/VC-002 with 108 activations
  - Next Mt Macedon VK3/VC-007 with 83
  - Mt Buninyong and Mt Warrenheip next up

160 metre portable antennas for SOTA ,

Peter VK3YE

When Ron asked me to do this talk, my first reaction was "Why would you?"

After all everything is against you.

Antennas can be long. Even where they are not, efficient loading coils are bulky.

It's often difficult to get a good ground on a rocky mountain.

Not like a footy oval where you can use the fence around it, or a metal jetty where there's often something to clip on to.

The benefits of height are less apparent on 160m than on say VHF.

The propagation characteristics for 160 aren't all that favourable.

And there's not all that much activity.

Ordinarily you'd be better off trying something else – eg 2 metres SSB.

Only reason you'd do 160 metres from a mountain is that it's there.

A bit like climbing the mountain itself.

And if you stay overnight there is the possibility of longer distance, interstate or even DX.

Question: How many of you have ever had a contact from your own station on 160 metres?

Yep, it's very much a minority interest.

Before we talk antennas we need to talk about the band itself.

160 metre propagation is different to other bands.

For a start ground wave – out to about 50 to 100 km – propagates better than HF bands. That's reliable – day and night. But to exploit it you need a vertical antenna. It cannot be horizontal.

And a good ground. If you know of a summit with a metal fire tower, fence or pipe then that could be worth considering for 160 metres.

There are not that many summits that are within ground wave range of capital cities. So contacts are likely to be hard. Being near salt water helps, which makes ground wave 160 metres far more suitable for Beaches of the Air than Summits of the Air.

Possibly more promising is skywave – though you do need to be out at night. This is good for out to about 200 or 300 kilometres with QRP. A horizontal dipole or inverted L, even if it is fairly low, can work OK here.

Sunspots will bottom out in a couple of years. There can be times when even 80 metres at night becomes unreliable. You'll be able to hear VK6s and ZLs but not people in your own state. This is where 160 metres can come into its own as rarely will you not be able to make contact.

As for activity this is split beween AM, SSB and CW with some digital. AM is mostly during the day, with a Melbourne net Monday – Saturday at 11am on 1825. Public holidays sometimes attract portable operators around the bay but never SOTA. At night it's more SSB with CW favoured for DXing.

Now onto antennas.

Probably the easiest is the inverted L. This is a useful all-round antenna good for local and longer distanes. Basically as much wire as possible fed with an L-match coupler. A single 9 metre squid pole can support it but you want the top wire to be as close to horizontal as possible. That may mean taking another squid pole if you can't tie it off on a nearby tree. Lots of fishing line can help you tie it off at a distance so keep the top as horizontal as possible.

Anywhere from about 3/16 to ½ wavelength can work. It needs to be fed against ground and for that you might want to lay one or more ground radials, or tie off to nearby metal objects. Fences are wonderful – just don't clip on to an electric one!

Another easy antennas is a dipole with its feedline tied together. I've had success with something as small as a 40 metre dipole with 9 metres of feedline. But then I had a good ground and stations weren't very far away. Again you need a ground to load it against and a wide range antenna coupler.

A lot of homebrew coupler designs might only do 40 or at best 80 metres. You may be able to modify these by switching in additional capacitance in parallel with the existing variable capacitor or inductance in series with what's there.

For capacitance you can buy a toggle switch that has a centre off. That gives you 3 positions. Supposing your variable capacitor has a maximum of 220pF. So what you do is you switch in a fixed 220pF capacitor to get up you to 440 pF. If you want more and you have a centre off switch you can put say a 470 on the other switch pin to get you up to nearly 700pF. That might still not be enough. A possibility if you don't have much space is to build a coupler with a compression trimmer. Larger types can go up to about 1000 pF.

As for the inductance you could just keep the existing coil intact and add one about the same inductance as the original. A switch acros it could allow it to be switched in or out. If you don't want to modify your existing coupler it might be easier to build a separate one for 160 metres, or maybe one with 80 metres thrown in.

Another possibility is a loaded vertical. This can be supported on a 9 metre squid pole. You will need to mess around with the loading coil which should be towards the top or at least in the centre. A capacitance hat made of two wires can help. You will probably need an antenna coupler at the bottom but you can get around it if your rig already has one inbuilt like this Seacom.

My final option is a vertical supported by a kite. This gives the best results of any antenna mentioned here. I've done a couple of videos demonstrating this. If you can support a half wavelength of wire the ground requirements become less onerous.

To conclude 160 metres portable is a fun challenge and I hope I've given you some ideas. However a summit is probably the worst place to do it from and you'd be better off by the bay or on a pier.

SOTA VK3 Conference 2017

- Elecraft KX2 for SOTA-

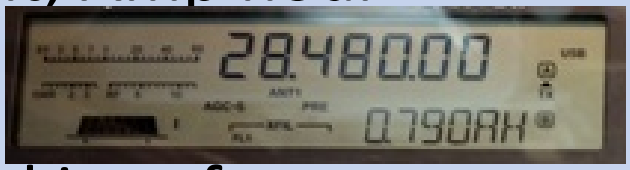
Glenn Sneddon
VK3YY

KX2 Overview

- 80/60/40/30/20/17/15/12/10 metres
- 10 W SSB / CW
- Data modes, RTTY/PSK31/PSK63
- Multi function knobs
- Fast tune and slow tune knobs

KX2 Overview

- Software Defined Radio (SDR), KX3 heritage
- Voice recorder for canned CQs etc
- CW keyer and decoder
- Monitoring of PA temp, Volts, Current, Amp hour
- Digital filters
- Logging s/w interface, remote control interface
- Clock (optional for battery backed)
- Internal Mic., great for those “I left the mic at home” moments



KX2 in the field

Comparisons to FT-817

- Very different rig to FT-817 in may ways
- One of the best available SOTA options
- Weight with Lithium battery and mic:
  - KX2 = **670** gm FT-817 = **1247**gm
- Size comparison below:

FT-817 Pros

- 160m, 6m, 2m and 70cm bands.
- Pretty durable, only problem after 4 years of SOTA was the power button rubber.
- Two antenna sockets. (useful for two band setup)
- Nice mechanical construction / castings.
- Good TX audio.
- Proven radio.
- Cheaper!

FT-817 Cons

- High receive current consumption ~300 + mA
- Heavier.
- Small display is hard to read especially in the sun.
- Small knobs and buttons.
- Getting quite old now (16 yrs) but holds up well.

KX2 Pros

- Low receive current consumption. ~160 mA
- Very compact
- 10 Watts output. 1/2 an S point?
- Easy to read display.
- Larger controls widely spread out.
- Rich software features such as filters, voice memories.
- Battery amp hour + current display, clock.
- DSP filters
- Better receiver (adjacent channel) @10kHz ~ 10dB

KX2 Pros

- Metering in general
- Nice form factor.
- Lightweight.
- Can use hand held with internal mic and whip antenna.
- Good support for software updates and utilities on the Elecraft website.
- Digital modes built in. Ie. PSK31
- Optional ATU, Real Time Clock, Input/Output
- TX and RX equalisation
- Optional CW paddle (USD 110)

KX2 Cons

- Price. (at least in Australia) USD 750 + 60 (mic.)
- Gaps in mechanics.
- Microphone a bit sup par in mechanics for price. (gaps in plastics, wobbly pressel)
- Knobs feel a bit cheap
- Access to battery exposes internals to damage
- Removing battery to charge
- Bezel easily scratched

KX2 Nags

- Mic. gain knob easily adjusted by accident.
- Removing the battery to charge it.
- Sometimes speaker is hard to hear.
- Microphone build.

- All things considered, the KX2 is a mighty little radio, but I wouldn’t retire the FT-817 just yet!

SOTA Considerations

- Keep it dry and away from dust
- Speaker on the rear, needs to be raised. Rear leg helps
- Can be used hand held with a loaded whip
- Easy to read display
- Lots of metering available at same time
- Inbuilt ATU (option)
- Bolt on key (option)
- PSK for bad conditions
- Battery amp hour display useful

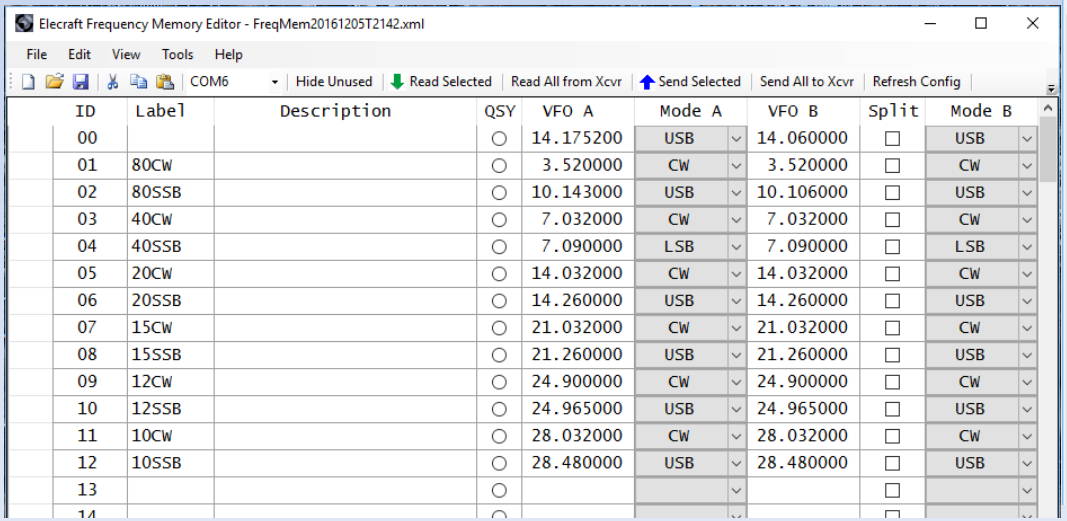
- At the end of the day, its the water that weighs you down!

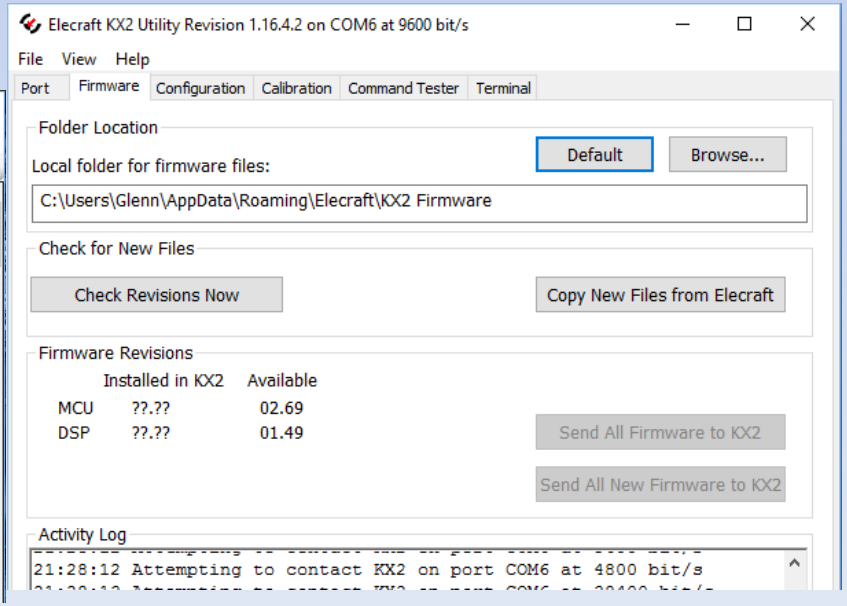
Operating Handheld

- Diamond 80-6m whip
- Trailing ground wire from banana socket on rig
- Internal KX2 Mic.
- Contacts on 20m
- Flimsy but works

KX2 Support and Tools

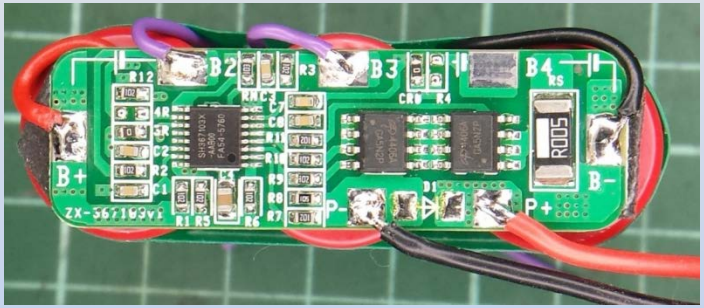
- USB interface
- Memory editor / manager
- Software updater
- Factory remote command set
- Web forum

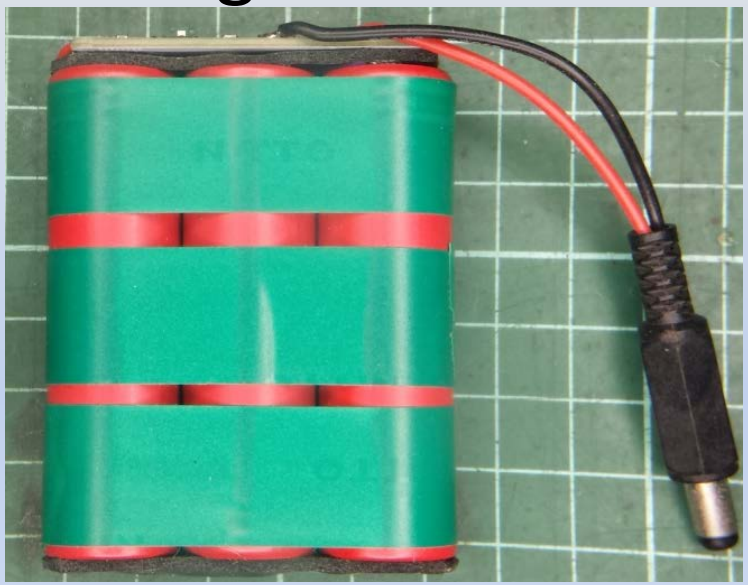




KX2 Other Bits

- Home built battery incorporating BMS

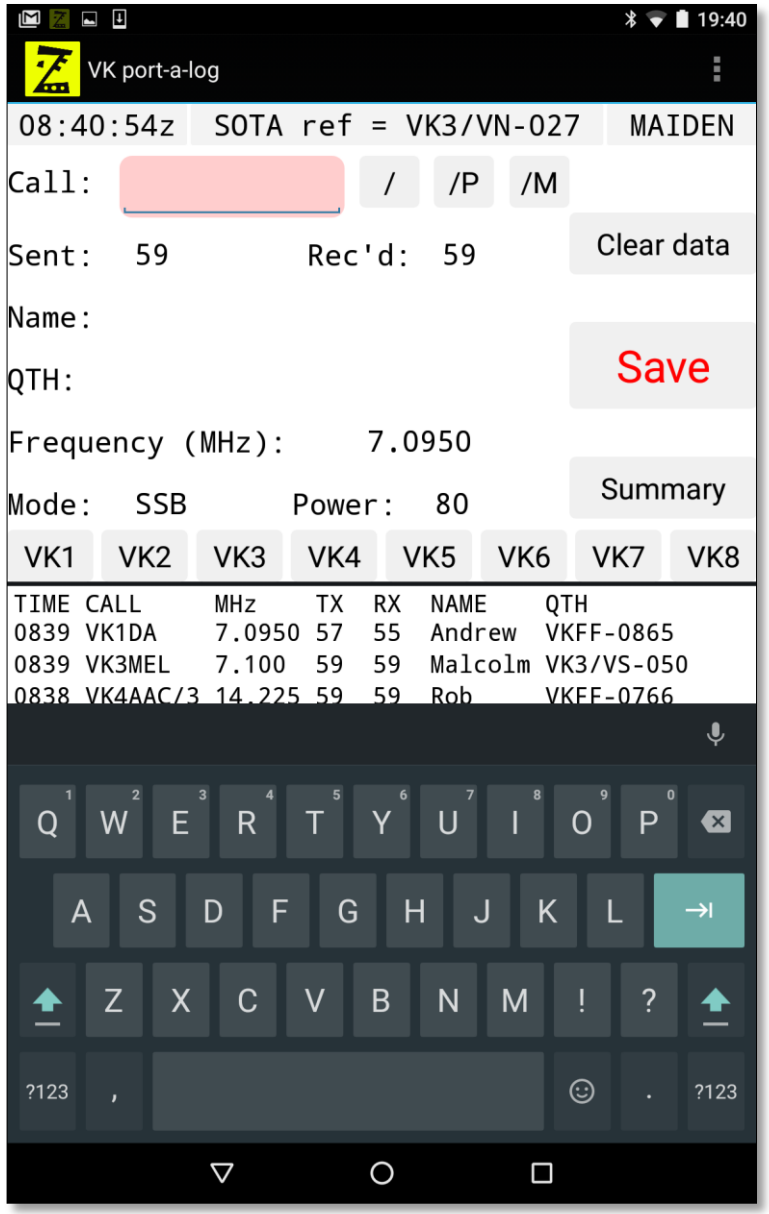




- Original Mic.
- Repurposed Mic.

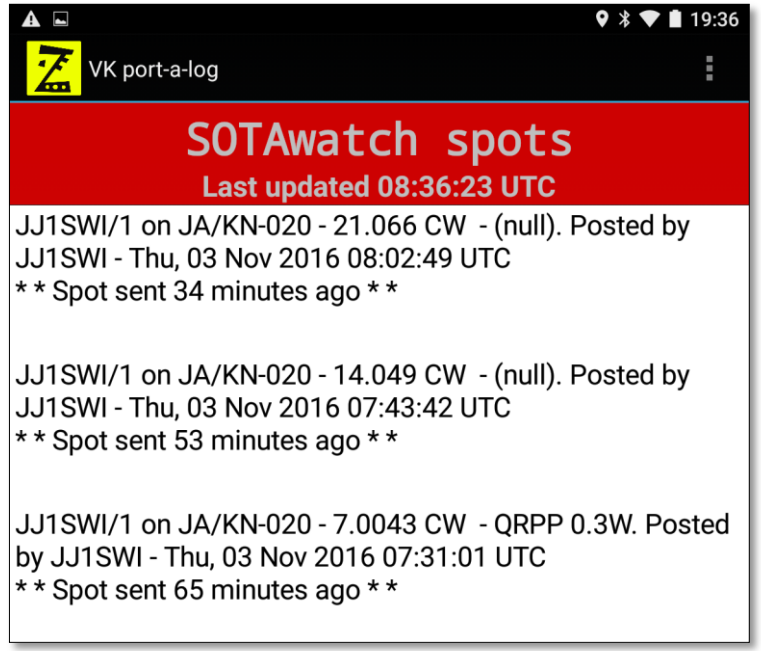
The End!

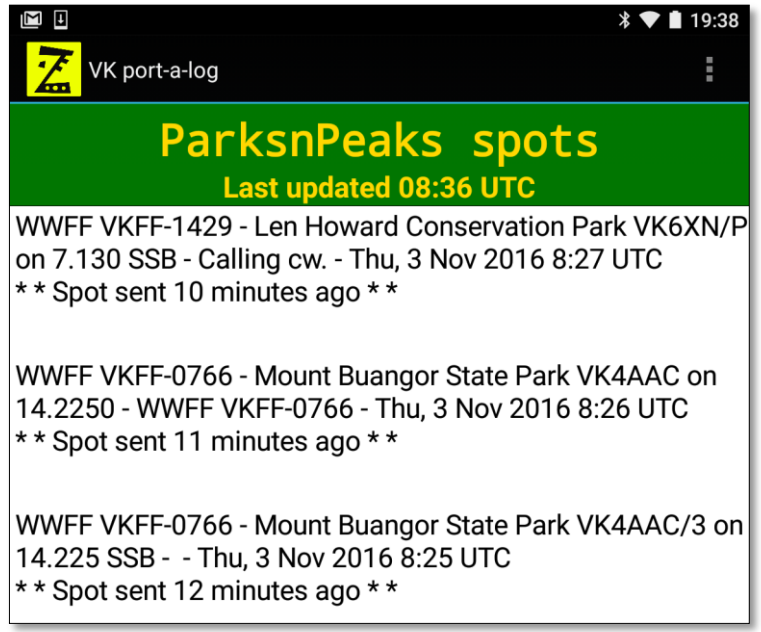

VK port-a-log
Peter – VK3ZPF
www.vk3zpf.com



- Captures QSO info including time, call sign, name, location, signal reports, mode, rig and power
- Supports SOTA, WWFF, KRMNPA, SANPCPA and VK Shires awards
- Uses the inbuilt GPS, where fitted, to determine the Maidenhead locator
- Outputs V 2.0 CSV file format compatible with SOTA database uploads for activate and chase logs
- Outputs ADIF 3.0.4 file format compatible with mainstream logging programs
- Displays distance and compass bearing from major landmark – VK capital cities or user defined location
- Has hot keys for most VK call sign prefixes, eight user defined prefixes or numbers zero to nine for faster log entry

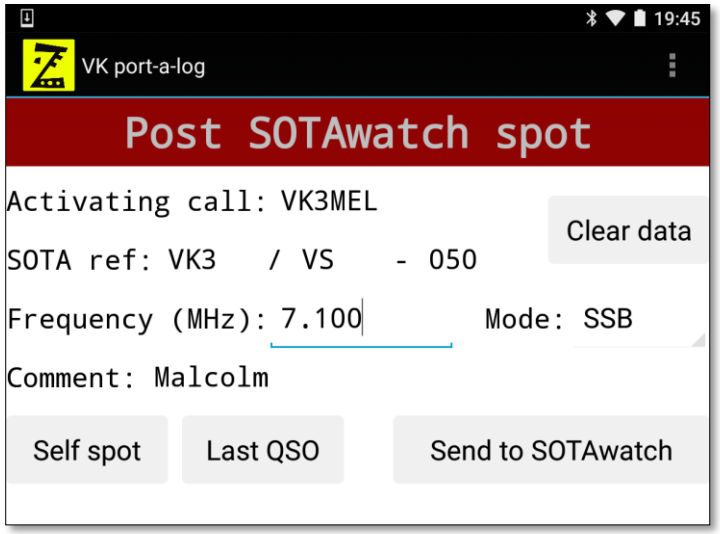
- Includes locator, SOTA reference, VKFF reference and GPS location in comments field of ADIF file
- Writes new CSV and ADI files for each local calendar day
- Three operating modes – SOTA, portable and QTHR
- Has scroll list of QSOs, latest at top, for quick review
- Click QSO in scroll list to edit QSO details
- Choice of colours – white on black or black on white
- Auto completion of contacted station's name from names.csv file
- Displays filtered SPOTs from SOTAwatch and ParksnPeaks websites for SOTA, VKFFF, ZLFF, WWFF and VK Shires

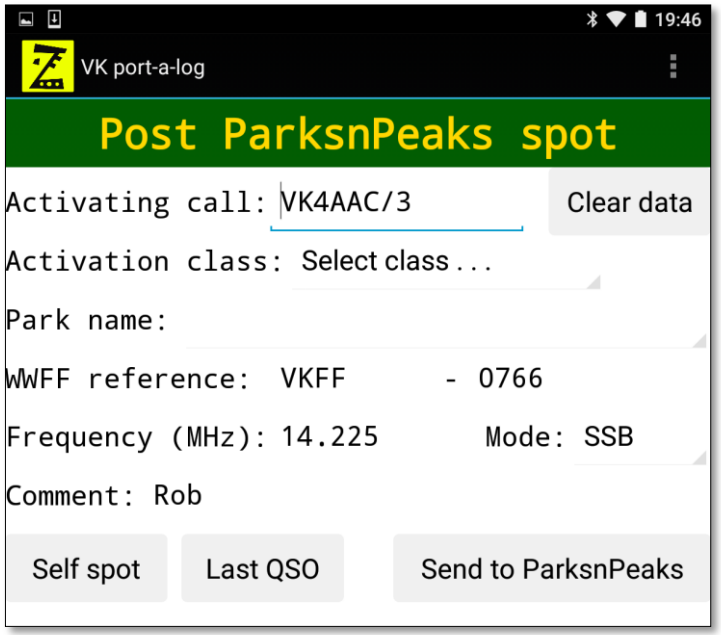


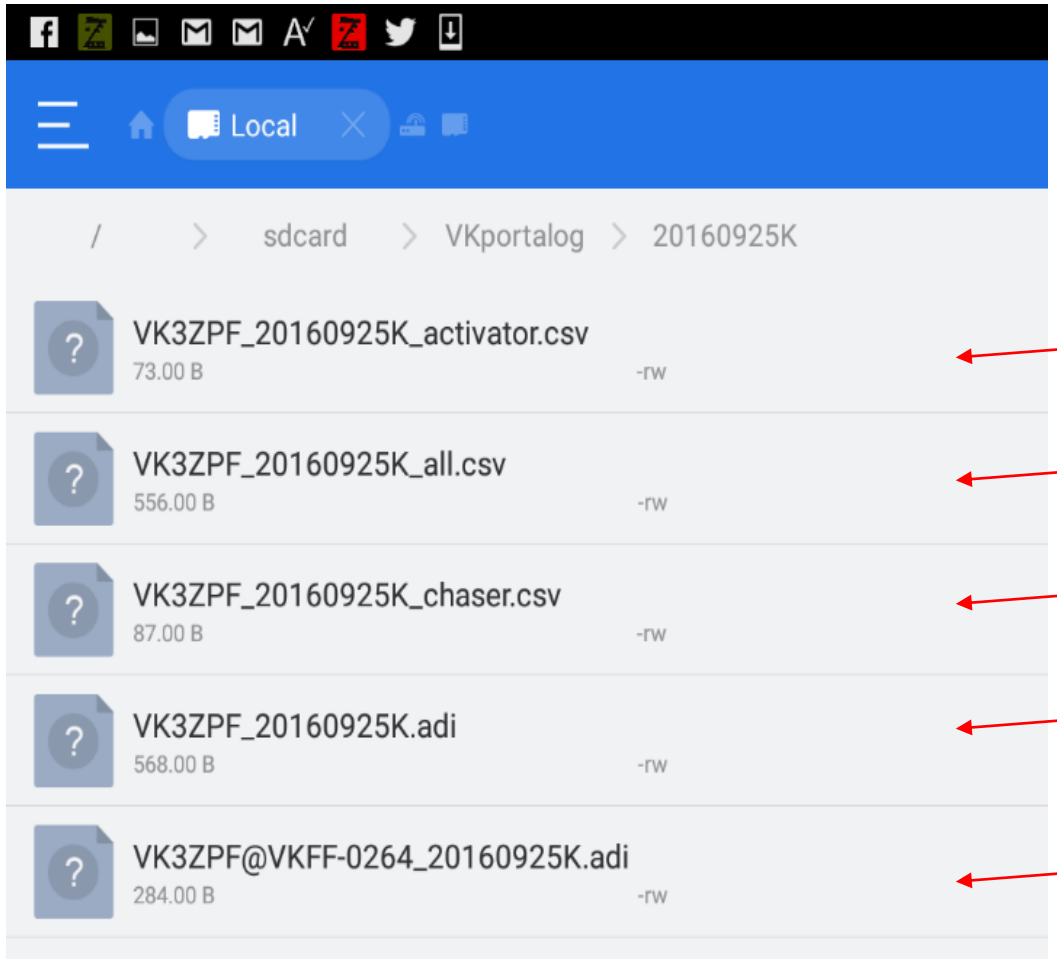


- Six different SPOT alert sounds
- Sends SPOTs to SOTAwatch and ParksnPeaks websites
- Click SPOT to copy details to log
- Copy last QSO details to SOTAwatch or ParksnPeaks spot post
- Works on most Android tablets and phones

- Available at www.vk3zpf.com







- Log files can be copied or emailed using third party apps such as ES Explorer File Manager

- SOTA CSV activator file ready for upload to sotadata.org.uk
- CSV file containing all data for the local day – Can be opened in Excel
- SOTA CSV chaser file ready for upload to sotadata.org.uk
- ADIF file ready for import to third party logging software.
  Contains all QSOs for the local day.
- ADIF file ready for import to WWFF program. Contains only QSOs made from WWFF area mentioned in file name.

www.vk3zpf.com

40 m is not working, again!

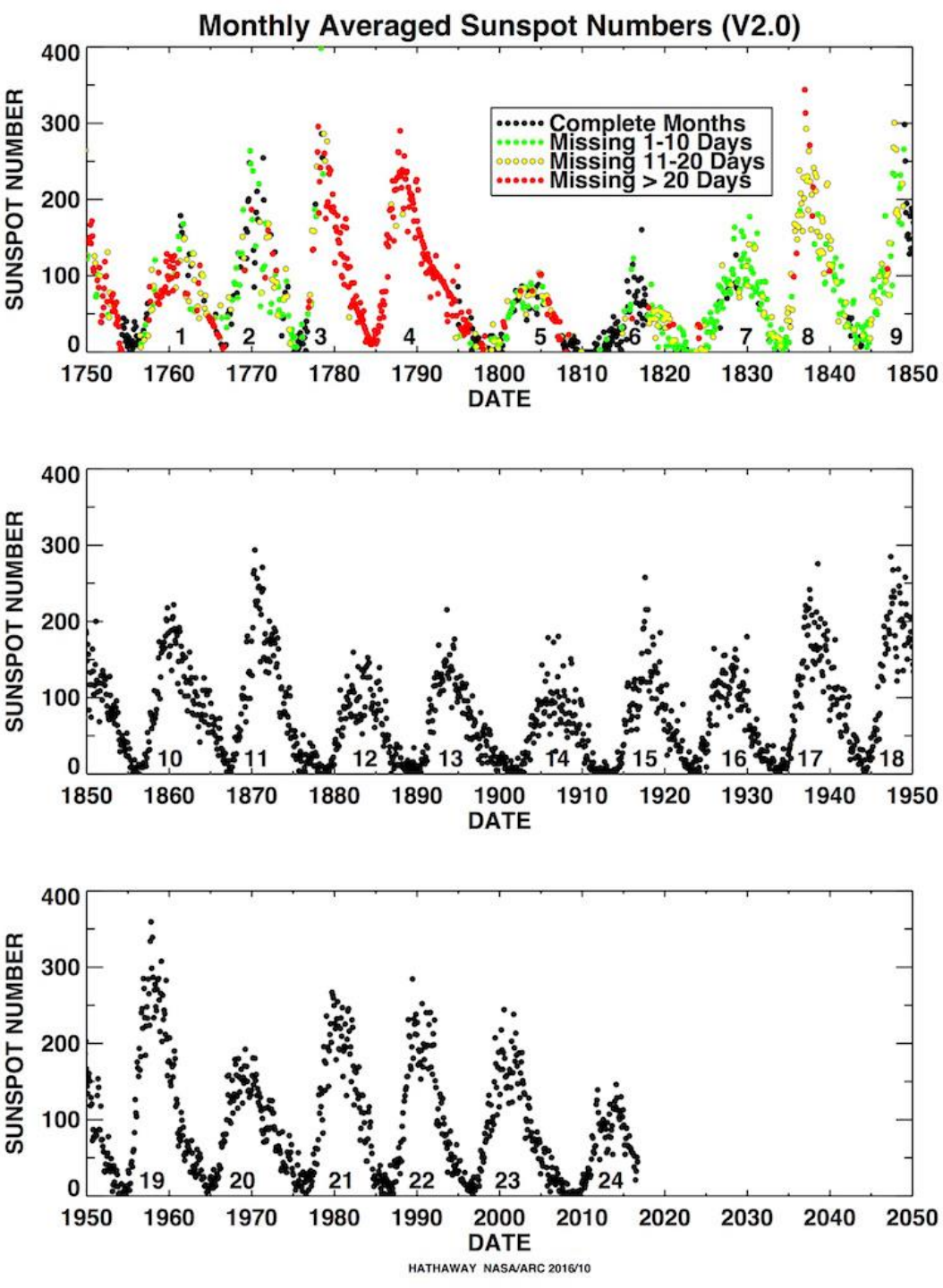
Some VHF alternatives

Poor HF propagation around VK

- Australia Day 2017
- VK1AD
  - Screen shots of SWS - HF propagation around VK. No wonder activators are struggling to complete four QSOs.
  - It pays to check SWS before heading out the door to a mountain peak.
- Plus other comments about propagation
- VK2HRX
  - I used 2 m and 23 cm only for my second summit. Didn't try the HF antenna.
  - I could get used to that!

Solar cycle

- Sunspots numbers are dropping
  - Likely to be 2-3 years to the minimum, then slow rise
- Lower HF frequencies may work
  - 160 m, 80 m, 60 m for Advanced soon?
  - Implications for antennas
- Try higher bands on HF
  - Short skip on 20, 15, 10 m


Monthly Averaged Sunspot Numbers (V2.0)
SUNSPOT NUMBER
DATE
Complete Months
Missing 1-10 Days
Missing 11-20 Days
Missing > 20 Days
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
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22
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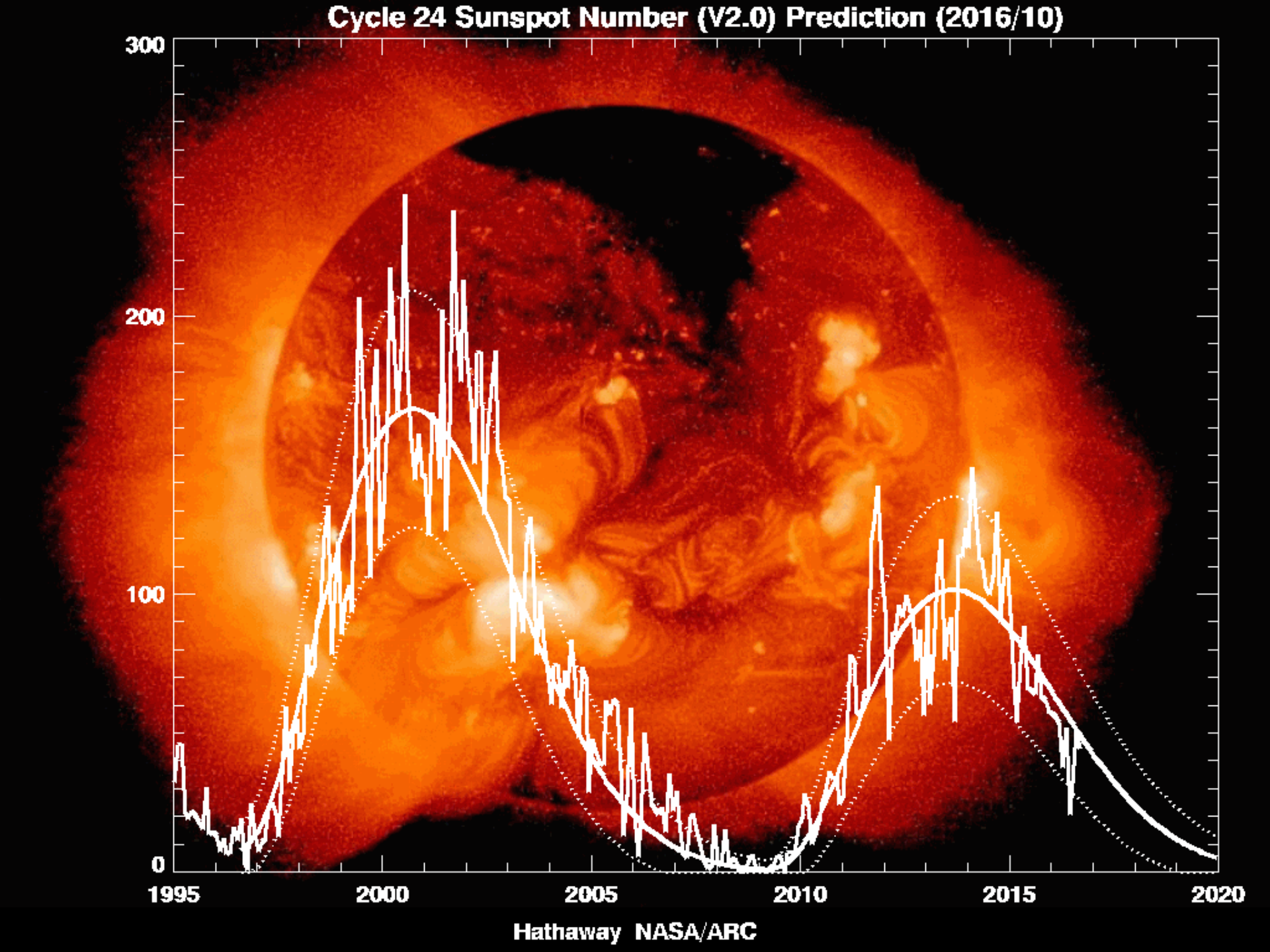
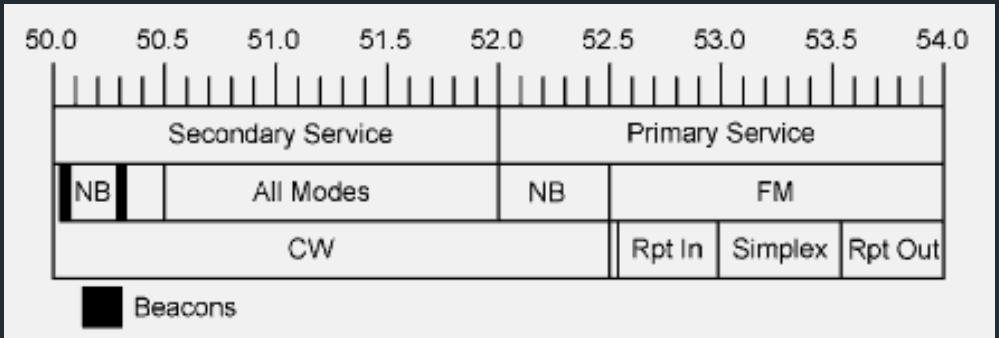
24
HATHAWAY NASA/ARC 2016/10


Cycle 24 Sunspot Number (V2.0) Prediction (2016/10)
300
200
100
0
1995
2000
2005
2010
2015
2020
Hathaway NASA/ARC

Why not go higher in frequency?

- 6 m (Advanced, Standard)
- 2 m (all)
- 70 cm (all)
- 23 cm (Advanced, Standard)
- Higher
- SOTA has an in-built advantage: you are on a hilltop

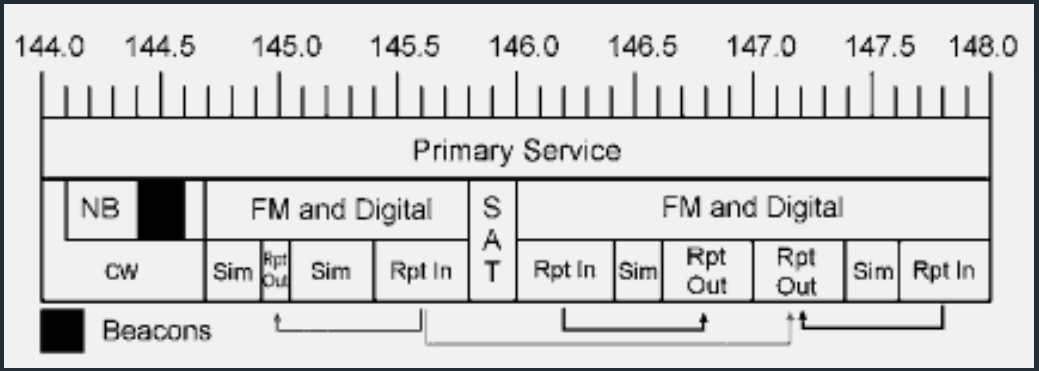


6 m (aka “The Magic Band)

- 50-54 MHz Advanced, 52-54 MHz Standard
- Good propagation characteristics, inc. Es, F2, TEP
- Antennas
  - Vertical (dipole, J-pole, “Flower Pot”, etc)
  - Horizontal (2-el Yagi, Moxon, etc.)
  - Try your 40 m HF antenna!

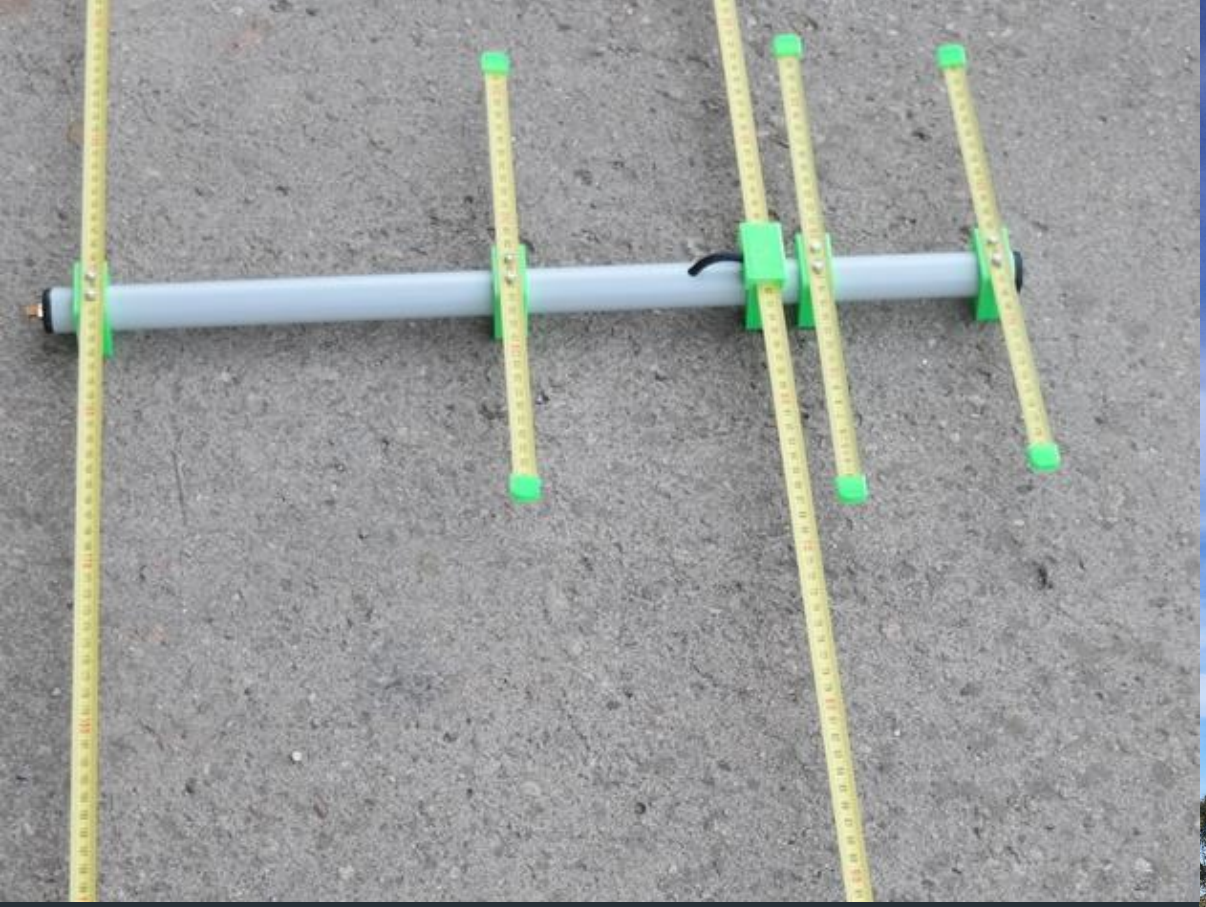
VK1AD best results

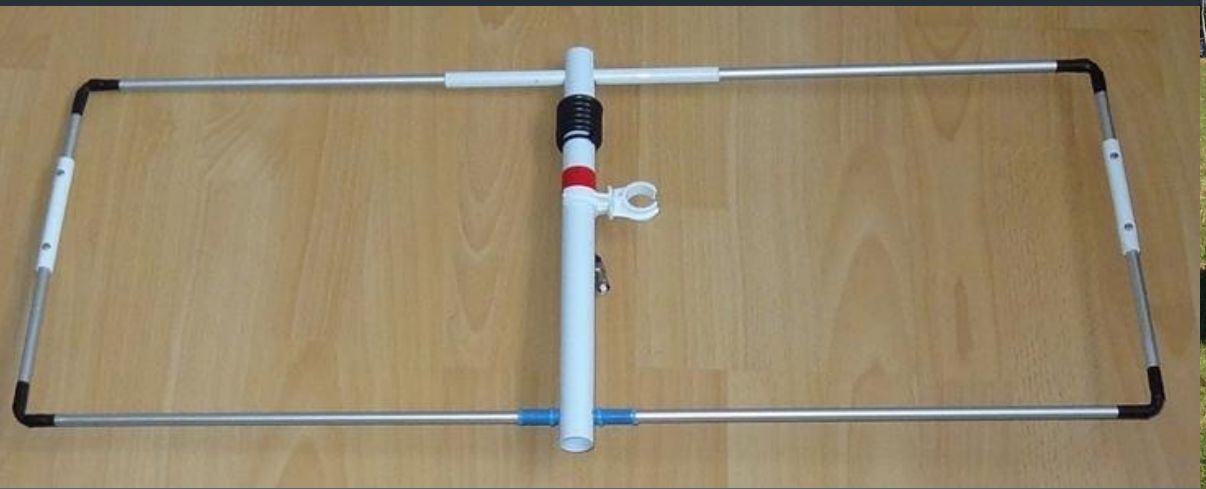
FT-857D	25 watts	Flower Pot	VK1/AC-039	ZL1SSW	2373	Sporadic E
FT-857D	25 watts	Flower Pot	VK1/AC-026	VK4FNQ	1746	Sporadic E
FT-857D	20 watts	Linked Dipole	VK2/SM-049	VK2IO/P S2S	315	Sporadic E
FT-817	5 watts	Linked Dipole	VK1/AC-043	VK2IO/P S2S	208	Short opening
FT-817	5 watts	Coaxial Vert λ/2	VK2/ST-015	ZL1AKW S2S	2340	Sporadic E
FT-817	5 watts	Coaxial Vert λ/2	VK2/ST-015	ZL1AIX S2S	2245	Sporadic E



2 m

- Available to all classes
- Many use handhelds
  - FM S/N barrier requires 10 dB more signal
  - At least use a better antenna than the duckie
- Try SSB or CW
  - 144.100, 144.150, 144.200
  - Horizontal pol. preferred
    - A dipole held horizontal
    - Small Yagi or Moxon





2 m

111 VK stations have activated
136 have chased

nmits ▸ Submit Log ▸ FAQ

Activator Results

about individual aspirations and working towards a goal at your own pace. However, it can be fun to see how your progress c

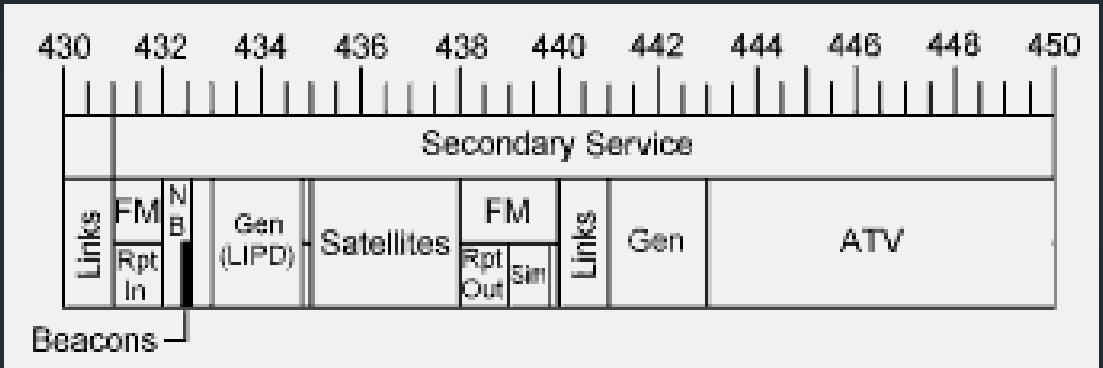
ularly submitting your SOTA logs.

Filter : All VK | -All Dates- | 144MHz | -All Modes- | Show!

Position	Activator Callsign	Summits	Points	Seasonal Bonus	Total Score	Avg. points per Expedition	View Log
1	VK1AD	248	682	108	**790**	3.19	View
2	VK3PF	66	459	42	**501**	7.59	View
3	VK3WAM	63	383	18	**401**	6.37	View
4	VK3ARH	52	329	33	**362**	6.96	View
5	VK2HRX	46	324	36	**360**	7.83	View
6	VK1RX	75	281	51	**332**	4.43	View
7	VK1MBE	62	286	39	**325**	5.24	View
8	VK3CAT	34	235	27	**262**	7.71	View
9	VK1DA	76	225	30	**255**	3.36	View
10	VK3YY	38	246	6	**252**	6.63	View
11	VK2QR	24	206	33	**239**	9.96	View
12	VK1FJAW	32	185	27	**212**	6.63	View
13	VK1DI	63	177	33	**210**	3.33	View
14	VK3KAB	22	192	0	**192**	8.73	View
15	VK2TWR	22	184	6	**190**	8.64	View
16	VK3MRG	30	154	18	**172**	5.73	View
17	VK3XDM	21	147	21	**168**	8.00	View
18	VK3EQ	29	145	21	**166**	5.72	View
19	VK3AFW	23	139	18	**157**	6.83	View
20	VK3KIM	16	118	15	**133**	8.31	View
21	VK2IO	25	105	24	**129**	5.16	View
22	VK3BYD	16	103	15	**118**	7.38	View
23	VK1MA	31	100	15	**115**	3.71	View
24	VK3ANL	32	108	0	**108**	3.38	View
25	VK5CZ	24	104	0	**104**	4.33	View
26	VK7TW	14	96	6	**102**	7.29	View
27	VK7FREU	13	89	3	**92**	7.08	View

2 m Results

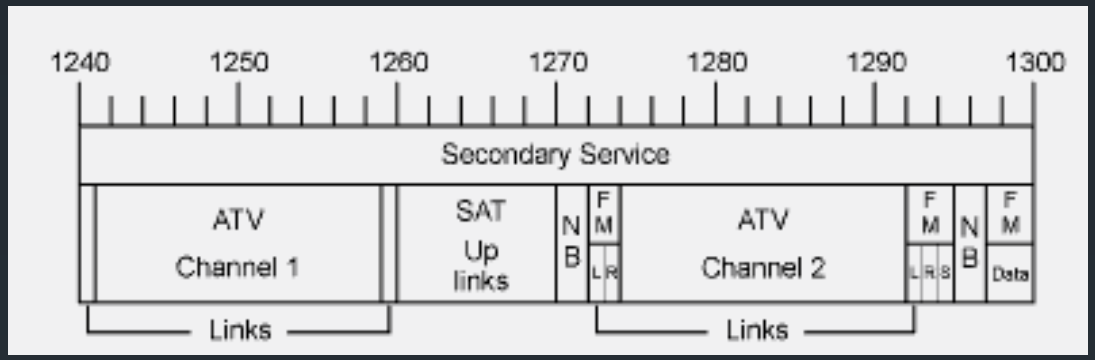
Contact	Locations	Pwr (W) + ant	Distance (km)
VK3PF/p – VK3MRG/p& VK3HRA/p	VK3/VE-025 – VK3/VG-001	5 + 6-el Y	30
VK3PF/p – VK100ACT/2	VK3/VE-025 – VK2/SM-001	5 + 6-el Y	133
VK3PF/p – VK3EJ	VK3/VE-025 – Cobram	5 + 6-el Y	175
VK3PF/2 – VK3EJ	VK2/SM-068 – Cobram	20 + 6-el Y	320
VK3PF/2 – VK2ZT	VK2/SM-068 – Medowie	20 + 6-el Y	480
VK3PF/p – VK1KW	VK3/VG-034 – Charnwood	20 + 6-el Y	215
VK1AD/p – VK3HRA/p S2S	VK1/AC-039 – VK3/VC-024	40 + 4-el Y	495
VK1AD/2 – VK3AXH	VK2/ST-053 – QF12	90 + 4-el Y	560
VK1AD/2 – VK2COW	VK2/SM-007 – QF44	5 + 3-el Y	173



70 cm

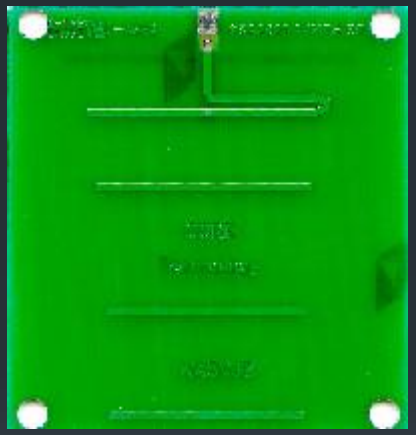
- Same comments as for 2 m
- SSB or CW
  - 432.1000, 432.150, 432.200

VK1AD						
FT-857D	18 watts	7el 70cm Yagi	VK2/ST-044	VK2DO	190	AE
FT-857D	18 watts	7el 70cm Yagi	VK2/ST-044	VK1RX/2 S2S	158	Direct Path
FT-857D	20 watts	7el 70cm Yagi	VK1/AC-023	VK1ATP/3 S2S	154	Direct Path mixed with AE
FT-817	5 watts	7el 70cm Yagi	VK2/SM-007	VK2COW	173	Direct path



23 cm

- Advanced & Standard only
- Some S2S work done with FM
- SSB
  - 1296.100, 1296.200
- Antennas are small
- My best DX:
  - SOTA: about 73 km (FM)
  - Possible via SOTA: 933 km (10 W SSB plus Alford slot antenna)



Higher

- 13 cm, 9 cm, 6 cm, 3 cm and higher
- Limited number of operators, especially SOTA
- 9 cm Panels a compact option
  - Expect around 100 km range panel to panel
- My best SOTA DX so far: 211 km on 3.4 GHz
- Scope for further activities, given the Rule changes on summit access