



Using the RBN for SOTA

by HB9BXE
Hans-Peter Blättler

Contents of today's presentation

- ◎ Target audience and myself
- ◎ Spots in general
- ◎ Automatic spotting via RBNHole
- ◎ What is the RBN?
- ◎ What's the purpose of the RBN system?
- ◎ Antenna testing & analysis with the RBN
- ◎ What do the S/N ratio numbers mean?
- ◎ Build your own RBN
- ◎ Summary

Introduction

Target audience

- ◎ SOTA enthusiasts
- ◎ Anyone interested in learning about the new **RBN** tool


My call HB9BXE

- ◎ Contest
- ◎ DXing
- ◎ Expeditions
- ◎ Now involved in SOTA

Spots in general

- ◉ Normally, self-spotting is frowned upon
- ◉ For contesting it is even forbidden - it results in penalties and deductions from your score
- ◉ When it comes to SOTA, though, self-spotting can be very useful and desirable

Various methods for getting a spot on SOTAwatch2

 **SOTAwatch2**

Login: Callsign Password | [Register](#) | [FAQs](#)

[Home](#) | [Spots](#) | [Alerts](#) | [Reflector](#) | [Website](#) | [Summits](#) | [Recent Summit Info](#) | [Database](#)
[Video](#) | [Photos](#) | [Shop](#) | [Mapping](#) | [Facebook](#)

This page refreshes every 1 minute. Last updated **07:56:52 UTC**.

Latest Spots

[>> more spots](#)

Sun 07:56	GX0000/P on G/NP-006	1.832 cw
	John here, 1843ssb & 80m cw/ssb to follow (Posted by G0VOF)	
Sun 07:29	ZL2AJ on ZL1/NL-076	21.250 ssb
	*also146.500 fm [SOTA Spotter] (Posted by ZL2AJ)	
Sun 07:02	ZL2AJ on ZL1/NL-076	7.090 ssb
	*also146.500 fm [SOTA Spotter] (Posted by ZL2AJ)	
Sun 06:48	ZL2AJ on ZL1/NL-076	14.310 ssb
	*also146.500 fm [SOTA Spotter] (Posted by ZL2AJ)	
Sun 06:36	ZL2AJ on ZL1/NL-076	7.105 ssb
	*also146.500 fm [SOTA Spotter] (Posted by ZL2AJ)	
Sun 06:25	ZL2AJ on ZL1/NL-076	7.090 ssb
	*also146.500 fm [SOTA Spotter] (Posted by ZL2AJ)	

Upcoming Activations

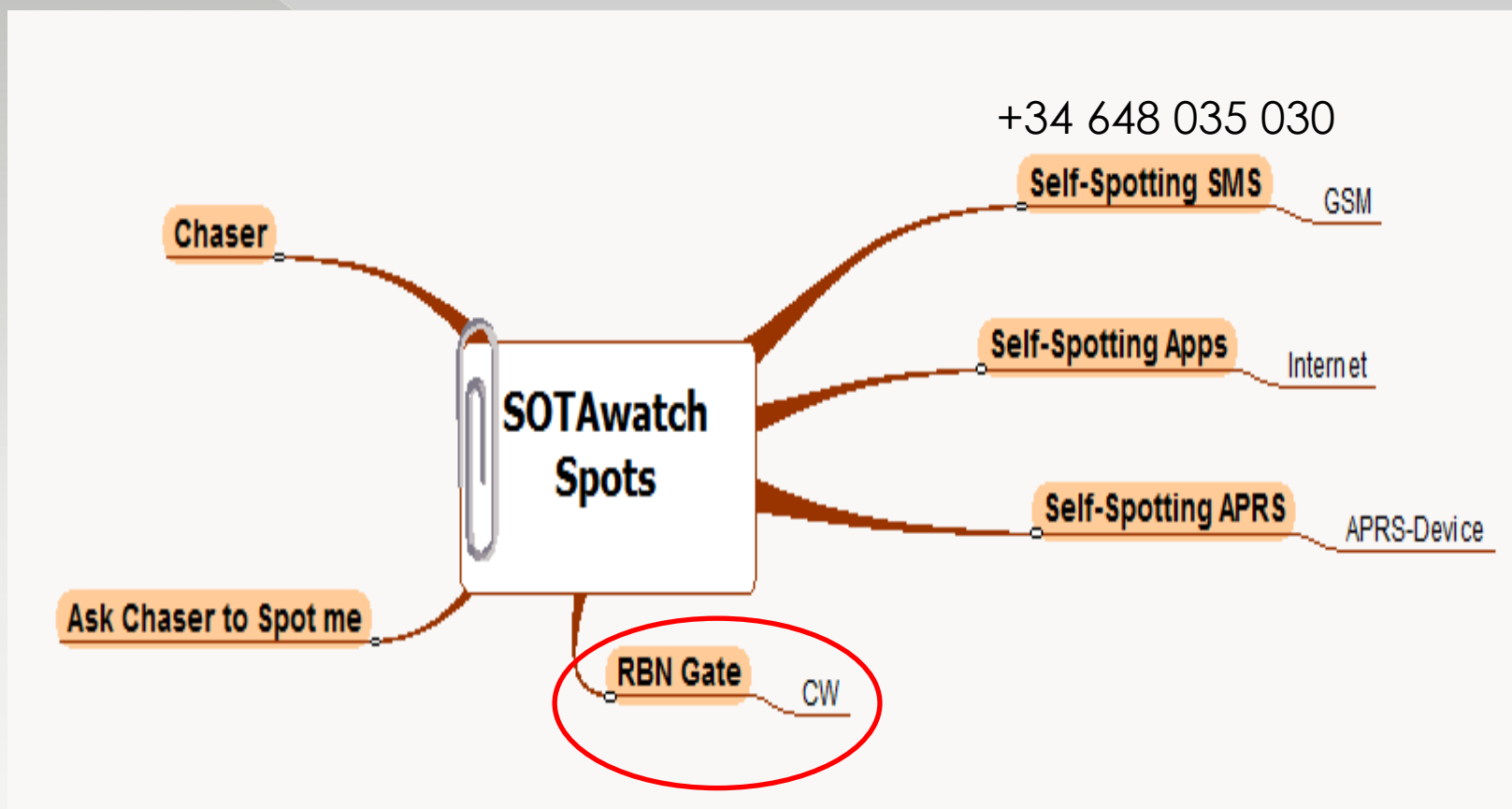
[>> more alerts](#)

Sun 08:00	DO5TMM/P on DM/BW-105	430-fm,430-ssb,145-fm,145-ssb,21-ssb
	time/freq +/- (Posted by DO5TMM)	
Sun 08:00	G4YSS on G/NP-006	1.832-cw,1.843-ssb,3.557-cw,3.724-ssb
	GX0000/P: 50W. Hoping to qualify on 160m? Foggy forecast (Posted by G4YSS)	
Sun 09:00	OE5HTL/P on OE/SB-242	145.500-fm
	Nur bei schönwetter! + / - 30 min. (Posted by OE5HTL)	

Reflector Latest

- [SOTA News February 2017](#)
by G0VOF, #3 by G0VOF, 4days ago
- [Sota Maps : Meters vs Feet](#)
by JG1XMV, #9 by JG1XMV, 12mins ago
- [70cm activity today](#)
by M1EYP, 36mins ago
- [Another G SOTA Addition and](#)
by M0HGY, #12 by G3CWI, 43mins ago
- [HamAlert: Push/SMS notificati](#)
by HB9DQM, #4 by VK1DA, 8hrs ago
- [Krusne hory west on 2m FM](#)
by DL3HJG, 15hrs ago
- [Changing Callsign / Username](#)
by M00FMF, #7 by M00FMF, 14hrs ago
- [Split of the French "F" SOTA A](#)
by ON6ZQ, #36 by M1MAJ, 14hrs ago
- [DL/HB9BIN/P on DM/BW-018 m](#)
by EA2IF, #3 by EA2IF, 17hrs ago
- [Colin, M1BUU - Mountain Goat](#)
by G4ISJ, #45 by VK1DA, 18hrs ago
- [Scoring, the 2017 edition... \(s](#)
by DD5LP, #38 by JG1XMV, 19hrs ago
- [M1BUU and N1EU historic QSO](#)
by K6FI, #4 by G4YSS, 22hrs ago

Various methods for getting a spot on SOTAwatch2




Once you reach the SOTA summit, you must simply call CQ -your call and the Spotting is coming automatic

Automatic spotting with RBNHole

The screenshot shows the SOTAwatch2 website in a web browser. The address bar displays www.sotawatch.org/alerts.php. Below the address bar is a navigation bar with links: [Meistbesucht](#), [Erste Schritte](#), [Aktuelle Nachrichten](#), [Garmin](#), and [WEB.DE Services](#). The main header features the SOTAwatch2 logo on the left and the text "Logged in as HB9BXE | [Log out](#) | [Edit Account](#) | [FAQs](#)" on the right. A secondary navigation bar contains links: [Home](#), [Spots](#), [Alerts](#), [Reflector](#), [Website](#), [Summits](#), [Recent Summit Info](#), and [Database](#). Below this are more links: [Video](#), [Photos](#), [Shop](#), [Mapping](#), and [Facebook](#). A status message reads: "This page refreshes every 5 minutes. Last updated 09:28:54 UTC." The main content area is divided into two sections. The left section, titled "Upcoming Activations", lists an activation for "Monday 6th February 2017" at "08:40" by "GW4CFS/P" on "GW/SW-009". The right section, titled "Reflector Latest", lists two items: "SOTA News February 2017" by G0VOF, #3 by G0VOF, 5days ago, and "SOTA Dinner at HAM RADIO Fr" by DD5LP, 2hrs ago. A "new alert" link is also visible between the two sections.

www.sotawatch.org/alerts.php

Meistbesucht Erste Schritte Aktuelle Nachrichten Garmin WEB.DE Services

 **SOTAwatch2**

Logged in as HB9BXE | [Log out](#) | [Edit Account](#) | [FAQs](#)

[Home](#) | [Spots](#) | [Alerts](#) | [Reflector](#) | [Website](#) | [Summits](#) | [Recent Summit Info](#) | [Database](#)
[Video](#) | [Photos](#) | [Shop](#) | [Mapping](#) | [Facebook](#)

This page refreshes every 5 minutes. Last updated 09:28:54 UTC.

Upcoming Activations

Monday 6th February 2017
08:40 GW4CFS/P on [GW/SW-009](#)

[new alert](#)


Reflector Latest

[SOTA News February 2017](#)
by G0VOF, #3 by G0VOF, 5days ago

[SOTA Dinner at HAM RADIO Fr](#)
by DD5LP, 2hrs ago

7-cw2-fm

Automatic spotting with RBN-Hole

 **SOTAwatch2** Logged in as HB9BXE | [Log out](#) | [Edit Account](#)

[Home](#) | [Spots](#) | [Alerts](#) | [Reflector](#) | [Website](#) | [Summits](#) | [Recent Summit Info](#) | [Database](#)
[Video](#) | [Photos](#) | [Shop](#) | [Mapping](#) | [Facebook](#)

Add New SOTA Activation Alert

Callsign:

Full summit reference: / (e.g. GM/WS-001)

Date of activation: (dd/mm/yyyy)

ETA (in UTC): (eg. 1215) MUST BE UTC

Freq(s)/mode(s):
(Format: [Freq-mode, freq2-mode2, ...] See examples below, max 40 characters)

Comments: (max 60 characters)

Posted by: HB9BXE

Examples for Band(s)/mode(s):
145-fm
145.500-fm, 144.300-ssb
5-ssb, 7-ssb, 145-fm
1.843-cw, 3.560-cw, 7.030-cw, 14.060-cw, 145-fm

CQ CQ SOTA DE HB9BXE/p HB9BXE/p K

www.sota.org.uk

What is the RBN?

- ◎ RBN is an abbreviation for **R**everse **B**eacon **N**etwork
- ◎ In other words, the opposite of a beacon
- ◎ Most everyone is familiar with the NCDXF Beacon Network (**N**orthern **C**alifornia **DX** **F**oundation)

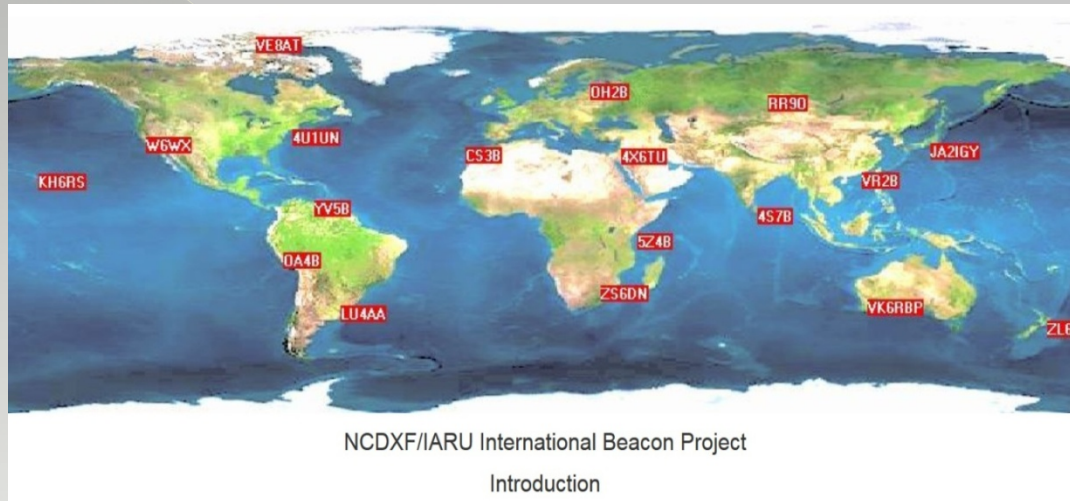
NCDXF Beacon Network



NCDXF/IARU International Beacon Project

Introduction

Difference between NCDXF and RBN



Beacons

18 stations worldwide

Only one station transmits at a time

Bands: 20m, 17m, 15m, 12m, 10m

Mode: CW



RBN

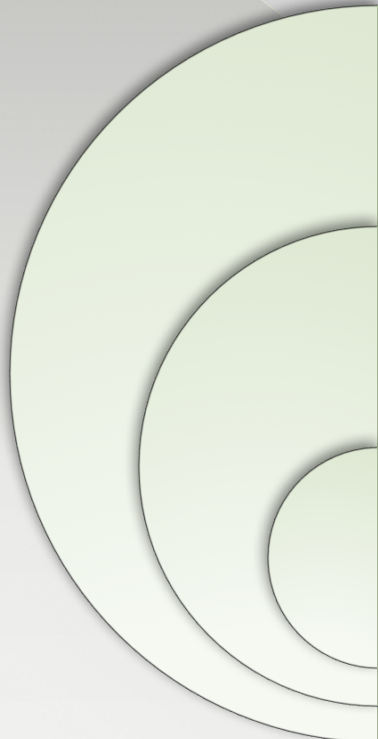
Worldwide about 150 skimmers online

All active at the same time

Bands: all bands

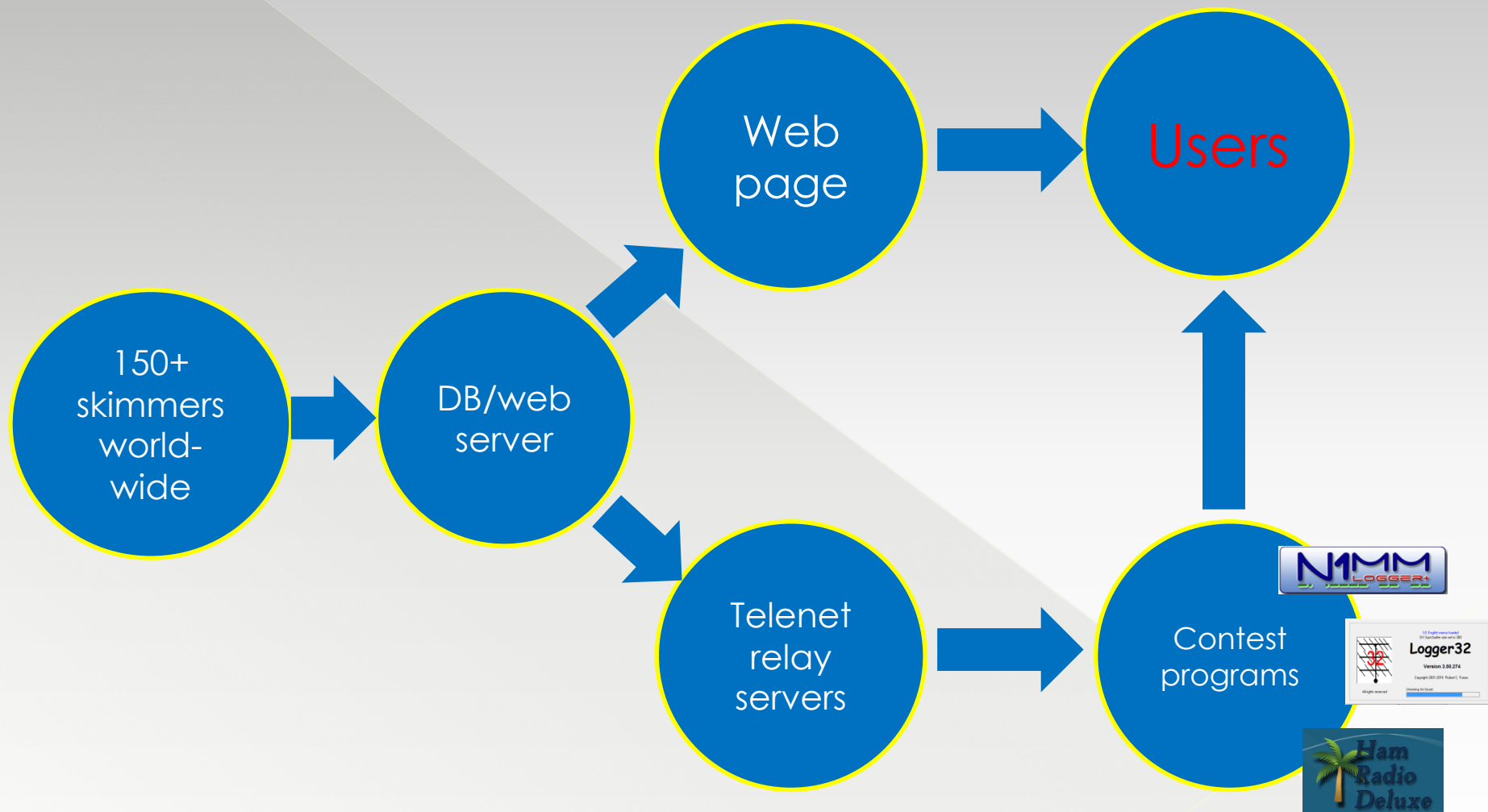
Mode: most digital modes

Comparison of NCDXF, DX cluster, RBN



NCDXF	<ul style="list-style-type: none">• You must tune into and monitor the beacon
DX cluster	<ul style="list-style-type: none">• Operated by people• No absolute readings
RBN	<ul style="list-style-type: none">• Reporting not done by people and done with absolute readings

How the RBN works

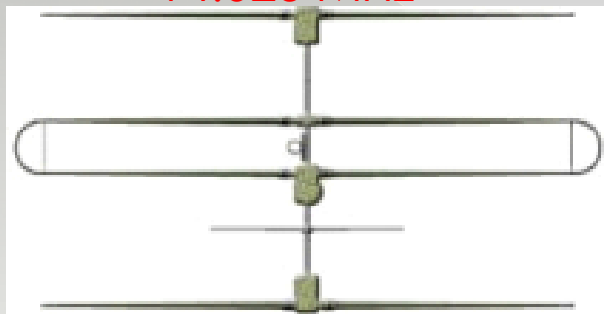


What is the RBN system good for?

- ◎ SOTA – chaser
- ◎ SOTA – activator
- ◎ DXing
- ◎ Contest
- ◎ Antenna tests
- ◎ Propagation studies

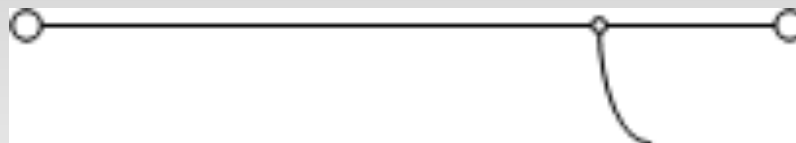
Antenna tests

Antenna A, SteppIR
20 wpm
14.025 MHz



Beam 18m above ground
Directed to the USA 300°

Antenna B, windom
25 wpm
14.026 MHz



Windom, 80m long,
15m above ground,
E-W orientation

Every 30 seconds we send “vv Test HB9BXE HB9BXE test- vv Test HB9BXE HB9BXE test” and so on.

Antenna test









Antenna B, 20 wpm

EA5WU	HB9BXE	14025.0	CW CQ [LoTW]	11 dB	21 wpm	1433z 09 Feb
WZ7I	HB9BXE	14025.0	CW CQ [LoTW]	39 dB	21 wpm	1433z 09 Feb
DK0TE	HB9BXE	14025.0	CW CQ [LoTW]	10 dB	21 wpm	1433z 09 Feb
F5RRS	HB9BXE	14025.2	CW CQ [LoTW]	13 dB	21 wpm	1433z 09 Feb
ON5KQ	HB9BXE	14025.0	CW CQ [LoTW]	10 dB	20 wpm	1433z 09 Feb
K4XD	HB9BXE	14025.1	CW CQ [LoTW]	9 dB	21 wpm	1433z 09 Feb
KP3Z	HB9BXE	14025.1	CW CQ [LoTW]	9 dB	20 wpm	1433z 09 Feb
HA6PX	HB9BXE	14024.9	CW CQ [LoTW]	13 dB	21 wpm	1433z 09 Feb
KS4XQ	HB9BXE	14025.1	CW CQ [LoTW]	7 dB	20 wpm	1433z 09 Feb
W1NT	HB9BXE	14025.0	CW CQ [LoTW]	10 dB	21 wpm	1433z 09 Feb
DF4UE	HB9BXE	14025.0	CW CQ [LoTW]	17 dB	21 wpm	1433z 09 Feb
W4KKN	HB9BXE	14025.1	CW CQ [LoTW]	13 dB	20 wpm	1433z 09 Feb
NY3A	HB9BXE	14025.0	CW CQ [LoTW]	13 dB	21 wpm	1433z 09 Feb
KM3T	HB9BXE	14025.0	CW CQ [LoTW]	22 dB	21 wpm	1433z 09 Feb
LA6TPA	HB9BXE	14025.0	CW CQ [LoTW]	13 dB	20 wpm	1433z 09 Feb
N4ZR/3	HB9BXE	14025.0	CW CQ [LoTW]	8 dB	21 wpm	1433z 09 Feb
W3LPL	HB9BXE	14025.0	CW CQ [LoTW]	33 dB	21 wpm	1433z 09 Feb

Antenna B, 25 wpm

de	dx	freq	cq/dx	snr	speed	time
HB9DQM	HB9BXE	14026.0	CW CQ [LoTW]	16 dB	25 wpm	1435z 09 Feb
W3LPL	HB9BXE	14026.0	CW CQ [LoTW]	9 dB	26 wpm	1434z 09 Feb
ZL2HAM	HB9BXE	14026.1	CW CQ [LoTW]	14 dB	26 wpm	1434z 09 Feb
KM3T	HB9BXE	14026.0	CW CQ [LoTW]	9 dB	25 wpm	1434z 09 Feb
E28AC	HB9BXE	14025.9	CW CQ [LoTW]	7 dB	26 wpm	1434z 09 Feb
VE2WU	HB9BXE	14026.0	CW CQ [LoTW]	8 dB	26 wpm	1434z 09 Feb
GW8IZR	HB9BXE	14026.0	CW CQ [LoTW]	5 dB	26 wpm	1434z 09 Feb
WZ7I	HB9BXE	14026.0	CW CQ [LoTW]	19 dB	26 wpm	1434z 09 Feb
ES5PC	HB9BXE	14026.0	CW CQ [LoTW]	41 dB	25 wpm	1434z 09 Feb
K3LR	HB9BXE	14026.1	CW CQ [LoTW]	9 dB	25 wpm	1434z 09 Feb
RU9CZD	HB9BXE	14026.1	CW CQ [LoTW]	11 dB	25 wpm	1434z 09 Feb
UD4FD	HB9BXE	14025.8	CW CQ [LoTW]	22 dB	26 wpm	1434z 09 Feb
SK3W	HB9BXE	14026.0	CW CQ [LoTW]	39 dB	26 wpm	1434z 09 Feb
HB9JCB	HB9BXE	14026.0	CW CQ [LoTW]	22 dB	25 wpm	1434z 09 Feb
SE0X	HB9BXE	14026.1	CW CQ [LoTW]	27 dB	25 wpm	1434z 09 Feb
LA6TPA	HB9BXE	14026.0	CW CQ [LoTW]	19 dB	26 wpm	1434z 09 Feb
3V/KF5EYY	HB9BXE	14026.1	CW CQ [LoTW]	28 dB	25 wpm	1434z 09 Feb

Antenna test further details

	de	dx	freq	cq/dx	snr	speed	time		Δ dB
+	KM3T	 HB9BXE	14025.0	CW CQ [LoTW]	22 dB	21 wpm	1433z 09 Feb	Ant A	13
	KM3T	 HB9BXE	14026.0	CW CQ [LoTW]	9 dB	25 wpm	1434z 09 Feb	Ant B	
+	3V/KF5EYY	 HB9BXE	14025.1	CW CQ [LoTW]	14 dB	20 wpm	1433z 09 Feb	Ant A	14
	3V/KF5EYY	 HB9BXE	14026.1	CW CQ [LoTW]	28 dB	25 wpm	1434z 09 Feb	Ant B	
+	WZ7I	 HB9BXE	14025.0	CW CQ [LoTW]	39 dB	21 wpm	1433z 09 Feb	Ant A	20
	WZ7I	 HB9BXE	14026.0	CW CQ [LoTW]	19 dB	26 wpm	1434z 09 Feb	Ant B	
+	ES5PC	 HB9BXE	14024.9	CW CQ [LoTW]	31 dB	21 wpm	1433z 09 Feb	Ant A	10
	ES5PC	 HB9BXE	14026.0	CW CQ [LoTW]	41 dB	25 wpm	1434z 09 Feb	Ant B	

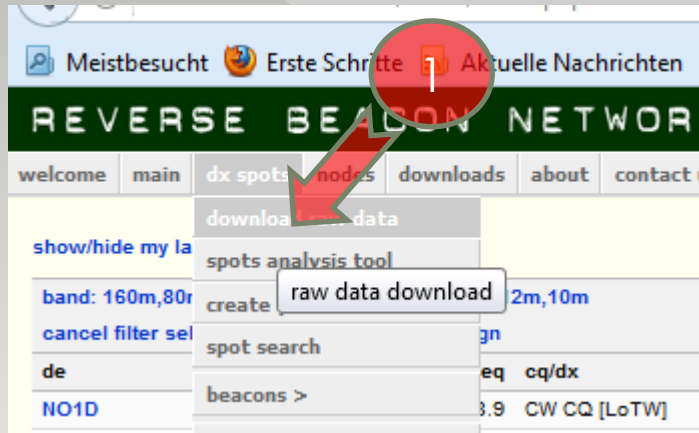
Ant A

3-element Yagi,
300°

Ant B

Dipole
oriented E-W

Retrospective analysis



10	Friday	2646KBytes	20170210.zip
11	Saturday	10989KBytes	20170211.zip
12	Sunday	10063KBytes	20170212.zip
13	Monday	2187KBytes	20170213.zip
14	Tuesday	2249KBytes	20170214.zip
15	Wednesday	2792KBytes	20170215.zip

2016

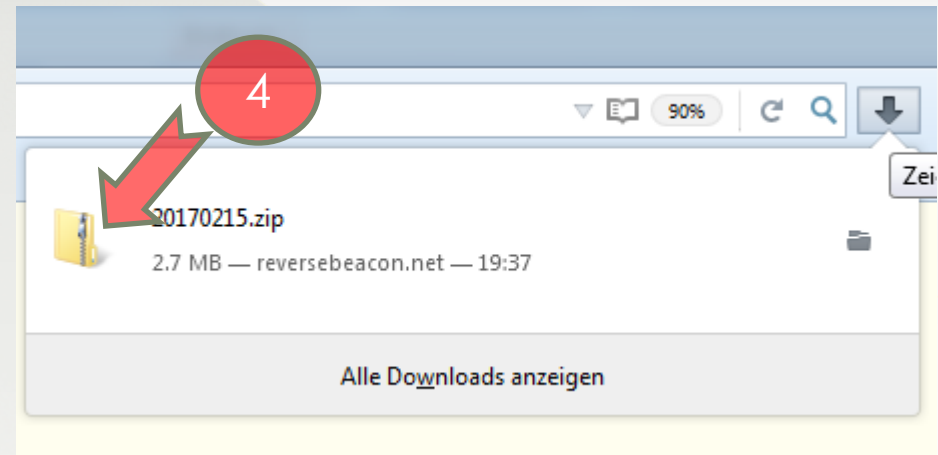
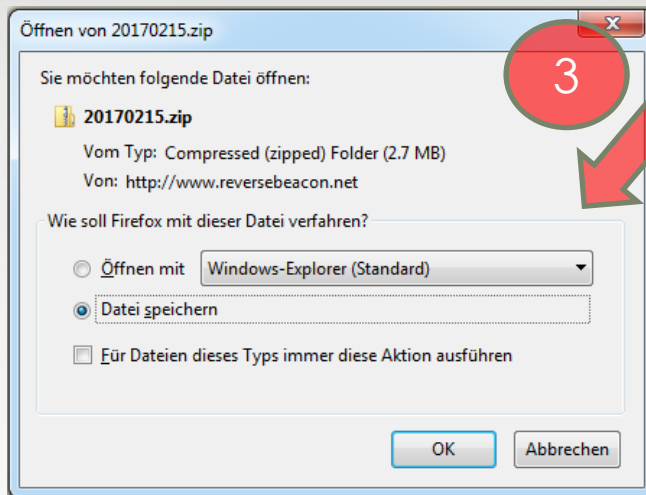
[January](#)

[February](#)

[March](#)

[April](#)

[May](#)



6

Analysis

5

7


	A	B	C	D	E	F	G	H	I	J	K	L	M
1	callsign	de_pfx	de_cont	freq	band	dx	dx_pfx	dx_cont	mode	db	date	speed	tx_mode
104435	HB9BXE	HB	EU	5371	60m	HB9BXE/P	HB	EU	CQ	52	15.02.2017	13:36:24	26
105457	DF4UE	DL	EU	5371	60m	HB9BXE/P	HB	EU	CQ	13	15.02.2017	13:38:29	28
108552	DK3UA	DL	EU	7031	40m	HB9BXE/P	HB	EU	CQ	18	15.02.2017	13:46:20	32
109330	OE6TZE	OE	EU	7031	40m	HB9BXE/P	HB	EU	CQ	17	15.02.2017	13:48:30	32
109339	DL8LAS	DL	EU	7031	40m	HB9BXE/P	HB	EU	CQ	19	15.02.2017	13:48:31	32
109358	ON5KQ-1	ON	EU	7031	40m					37	15.02.2017	13:48:34	33
109361	DJ9IE	DL	EU	7031	40m					17	15.02.2017	13:48:34	32
109365	G7SOZ	G	EU	7031.1	40m					17	15.02.2017	13:48:34	32
109366	HA6PX	HA	EU	7031	40m					10	15.02.2017	13:48:34	31
109385	DF4XX	DL	EU	7031	40m					7	15.02.2017	13:48:37	32
109387	DF7GB	DL	EU	7031	40m					13	15.02.2017	13:48:38	31
109389	HB9JCB	HB	EU	7031	40m					23	15.02.2017	13:48:38	31
109390	ON6ZQ	ON	EU	7031	40m					32	15.02.2017	13:48:38	32
109629	OK1IAK	OK	EU	7031	40m					25	15.02.2017	13:49:23	25
110341	HA1VHF	HA	EU	7031	40m					26	15.02.2017	13:50:58	31
112266	DL9GTB	DL	EU	7031	40m					23	15.02.2017	13:55:41	32
112271	HB9JCB	HB	EU	7031	40m					21	15.02.2017	13:55:44	32
112273	EA5WU	EA	EU	7031	40m					12	15.02.2017	13:55:44	31
112277	ON5KQ-1	ON	EU	7031	40m					29	15.02.2017	13:55:44	31
112278	DJ9IE	DL	EU	7031	40m					26	15.02.2017	13:55:44	32
112289	DL8LAS	DL	EU	7031	40m					14	15.02.2017	13:55:46	31
112291	G7SOZ	G	EU	7031.1	40m					14	15.02.2017	13:55:47	32
112460	DK3UA	DL	EU	7031	40m					19	15.02.2017	13:56:31	32
112491	ON5KQ	ON	EU	7031	40m					17	15.02.2017	13:56:39	32
112498	GW8IZR	GW	EU	7031	40m					13	15.02.2017	13:56:40	32
114108	GW8IZR	GW	EU	10111	30m					19	15.02.2017	14:01:10	26
114112	HA6PX	HA	EU	10111	30m					18	15.02.2017	14:01:10	26
114122	OH6BG	OH	EU	10111	30m					12	15.02.2017	14:01:15	25
114126	HB9BXE	HB	EU	10111	30m					51	15.02.2017	14:01:16	26
114200	HB9JCB	HB	EU	10111	30m					14	15.02.2017	14:01:34	26
115176	OH8WW	OH	EU	10111.1	30m					9	15.02.2017	14:06:11	22
115944	SK3W	SM	EU	14060	20m					17	15.02.2017	14:10:07	26

Von A bis Z sortieren
 Von Z bis A sortieren
 Nach Farbe sortieren
 Filter löschen aus "dx"
 Nach Farbe filtern
 Textfilter

- ☐ HB9BQR
- ☐ HB9BS
- ☐ HB9BSH
- ☒ HB9BXE/P
- ☐ HB9BXF
- ☐ HB9C
- ☐ HB9CCL
- ☐ HB9CEI
- ☐ HB9CGA/P
- ☐ HB9CHB
- ☐ HB9CMG
- ☐ HB9CNV
- ☐ HB9CPH
- ☐ HB9CQV
- ☐ HB9CRO
- ☐ HB9CRX
- ☐ HB9CTJ
- ☐ HB9CV
- ☐ HB9CVQ
- ☐ HB9CVT
- ☐ HB9CZF/P
- ☐ HB9DA
- ☐ HB9DAR
- ☐ HB9DAX
- ☐ HB9DEO
- ☐ HB9DGP
- ☐ HB9DGV

What do the S/N ratio values mean?

Example

HB9BXE  EA5DNO 14008.5 CW CQ [LoTW] 40 dB 27 wpm 1418z 07 Oct

- Noise floor for HF receiver at 14 MHz about -120 dBm
- Calculation: $-120 \text{ dBm} + 40 \text{ dBm} = -80 \text{ dBm}$

What do the S/N ratio values mean?

Example: $-120 \text{ dBm} + 40 \text{ dB} = -80 \text{ dBm}$

HB9BXE



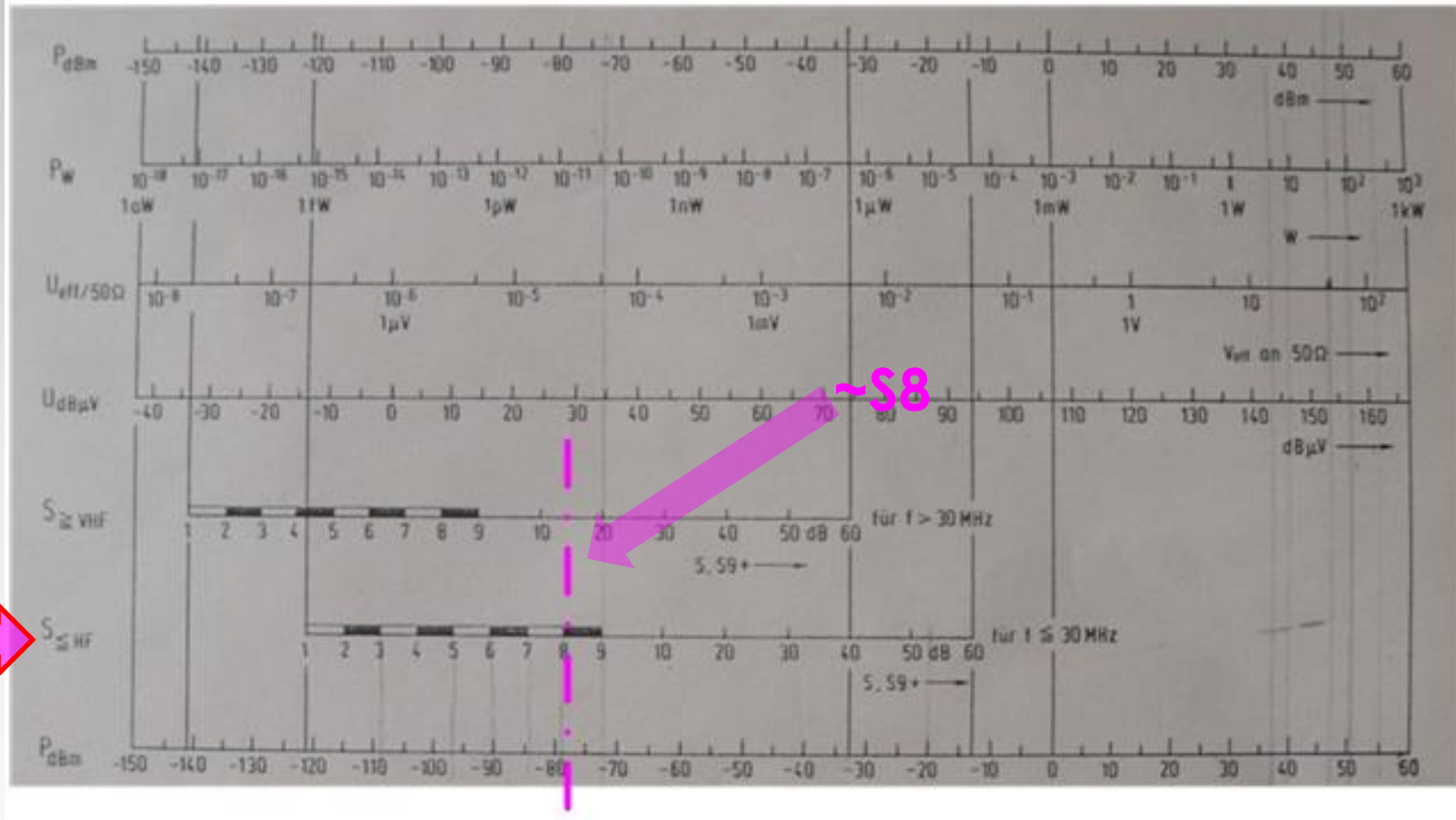
EA5DNO

14008.5 CW CQ [LoTW]

40 dB

27 wpm

1418z 07 Oct



Build your own RBN

SDR

- e.g. FiFi

Ant

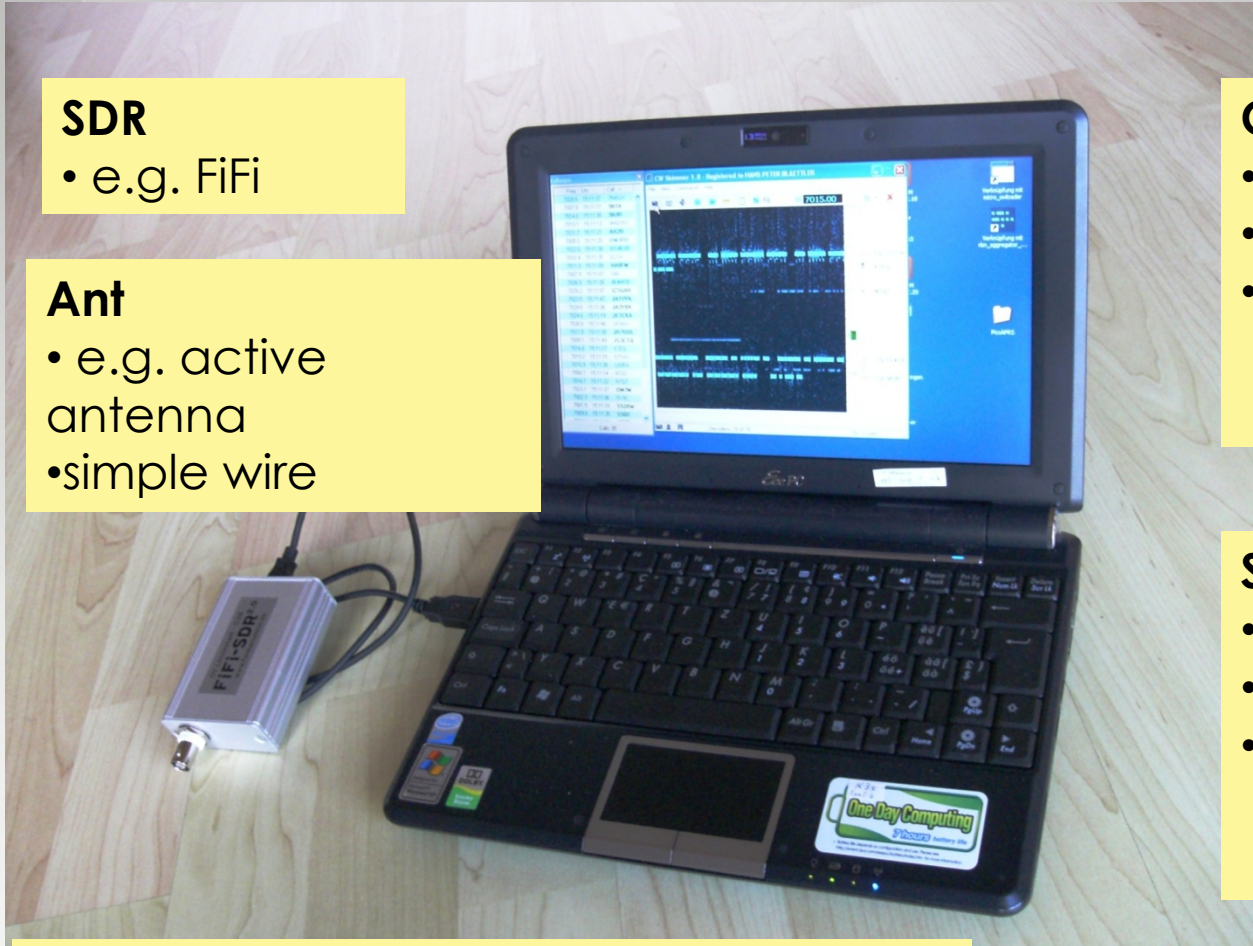
- e.g. active antenna
- simple wire

Computer

- 1.6 GHz CPU
- 1 GB RAM
- Windows XP

Software

- CFG
- Skimmer
- Aggregator

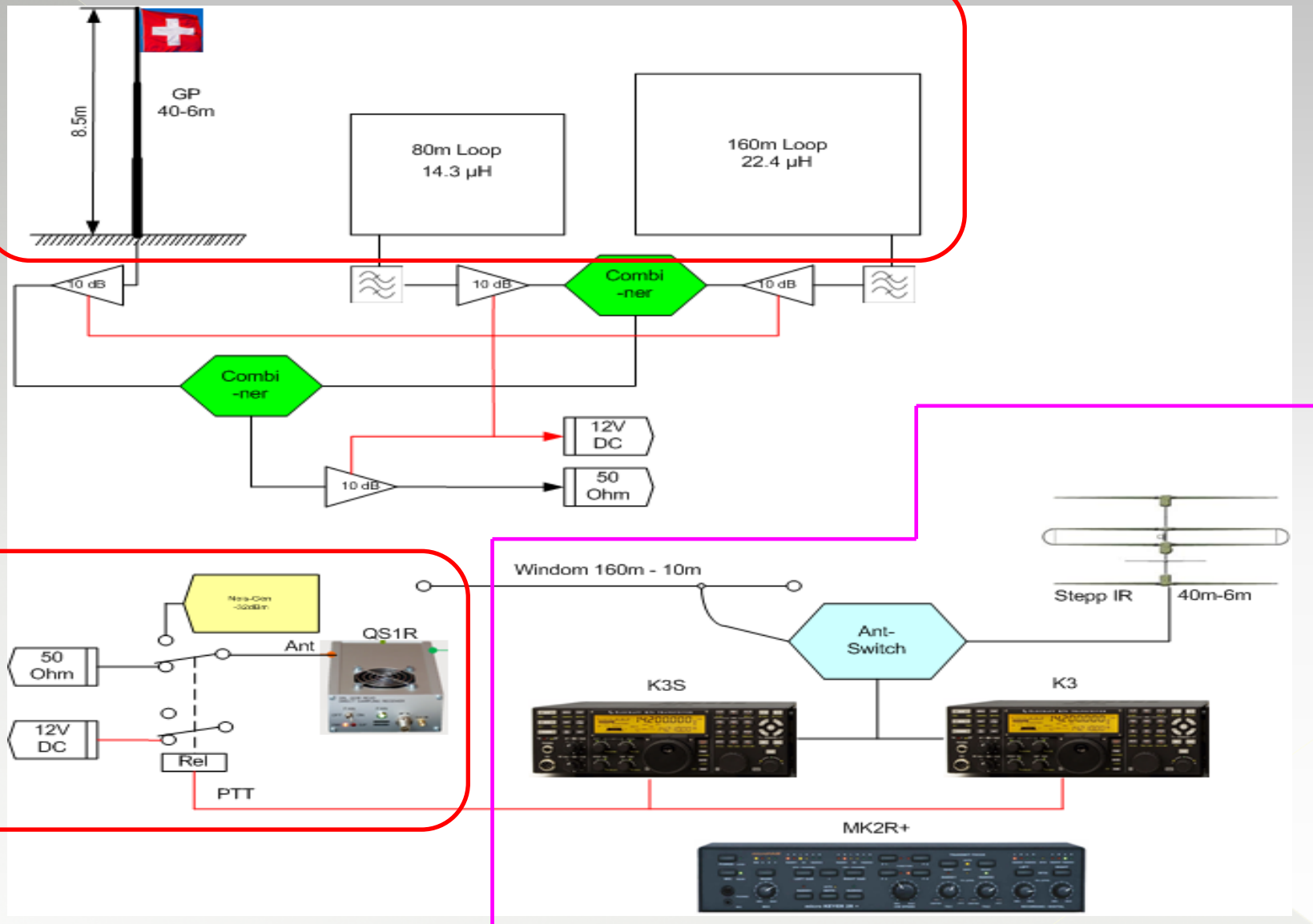


CFG: <http://pe0fko.nl/CFGSR/>

Skimmer: <http://www.dxatlas.com/cwskimmer/>

Aggregator: <http://www.reversebeacon.net/pages/Aggregator+19>

HB9BXE - RBN server



Two RBN tricks

- RBN support for “non-CW ops” --
Use a Morse Code program and send the following text:

v v test de HB9BXE HB9BXE test

This is not calling CQ because CW ops can tell that it is simply a test transmission

- If you would like to create several spots one after the other, then move the frequency each time by > 1 kHz

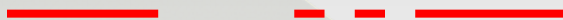
Summary 😊

- ⦿ RBN is a nearly real time propagation tool
- ⦿ Is free for everyone
- ⦿ Actual S/N ratio values in dB
- ⦿ Improve your DXing and contesting performance

You must keep the following in mind 😊

- ⦿ Unfortunately only CW and digital modes like RTTY / PSK supported
- ⦿ Callsigns are correct only to 99.9%
- ⦿ This is freeware, but please make a donation to the Yasme Foundation VE3NEA and KB9YIG
- ⦿ Please also try to build your own RBN server
- ⦿ In doing so, make sure that your frequency details are correct to **+ - 100 Hz!!**

Thank you for your attention



?