

Propagation Tools & andere Software (Tipps)

Claus Stehlik, OE6CLD





Tipps zur Verbesserung der Performance

- Sich persönliche Ziele setzen
- Andere vergleichbare Conteststationen analysieren
 - 3830scores.com, cqcontest.net, contestonlinescore.com
- Ausbreitungsbedingungen studieren
- Signalvisualisierung nutzen (SDRs, Wasserfall, ...)
- Kritische Analyse der Ergebnisse

Strategie

- Vorher
 - Antennen F/B, Signalstärken (RBN, WSPR)
 - Ausbreitungsbedingungen (div. Tools)
 - Hardware- und Software-Einstellungen überprüfen
- Während
 - Wo wird man gehört? (RBN, PSKReporter, WSPR)
 - Ausbreitungsbedingungen (div. Tools)
- Danach
 - Nachbearbeitung
 - Analyse (lokal und online)
 - Vergleich mit anderen Teilnehmern (Scoring-Seiten)
- **WICHTIG: kenne deine Programme!!!**





Tools: Ausbreitungsbedingungen

- Software für die Planung (vorab)
- Monitoring Tools in Echtzeit
 - Ausbreitungsbedingungen
 - PSK-Reporter (digitale Betriebsarten)
 - RBN Reverse Beacon Network (CW, RTTY)
 - WSPRnet



Software für die Planung

Tool

- SolarHam
- VOACAP Online
- Proppy

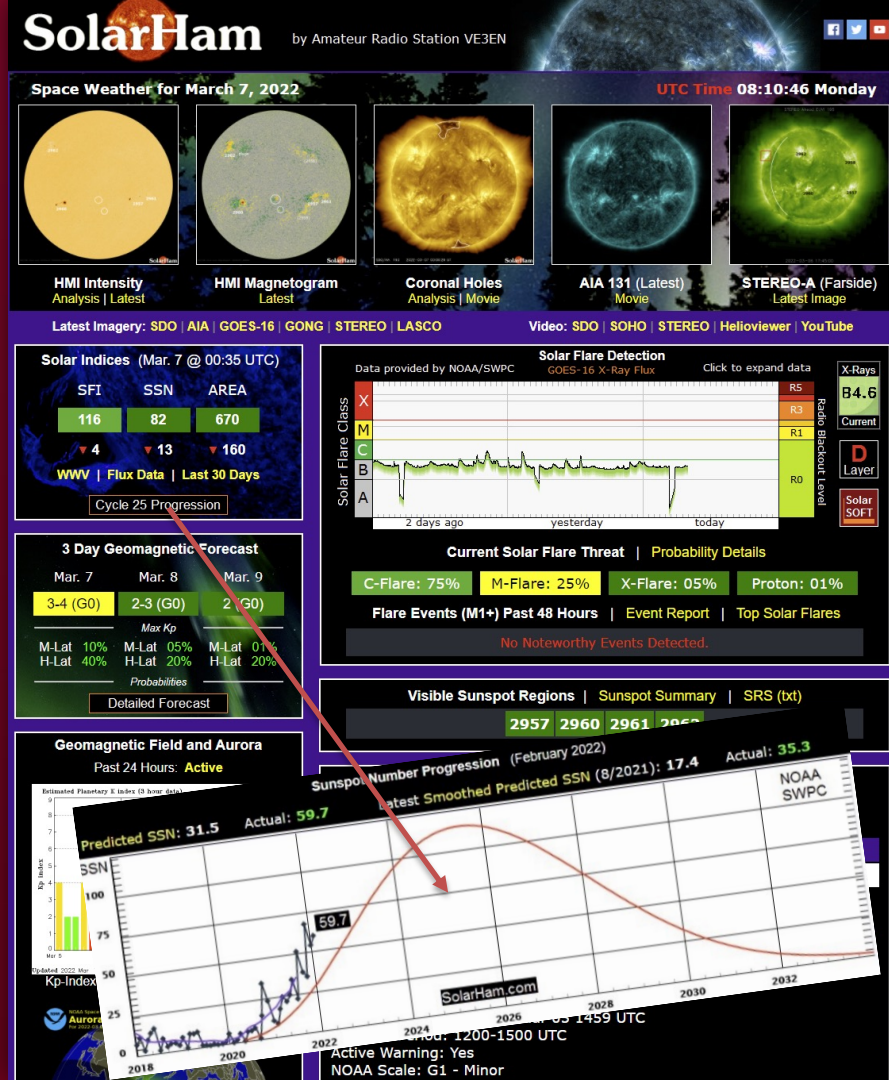
Link

solarham.net
voacap.com/hf
soundbytes.asia/proppy/

SolarHam

<https://solarham.net>

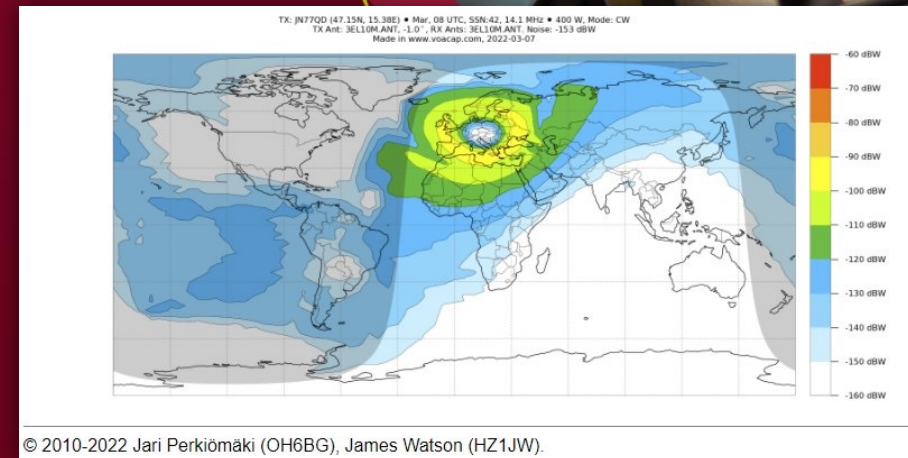
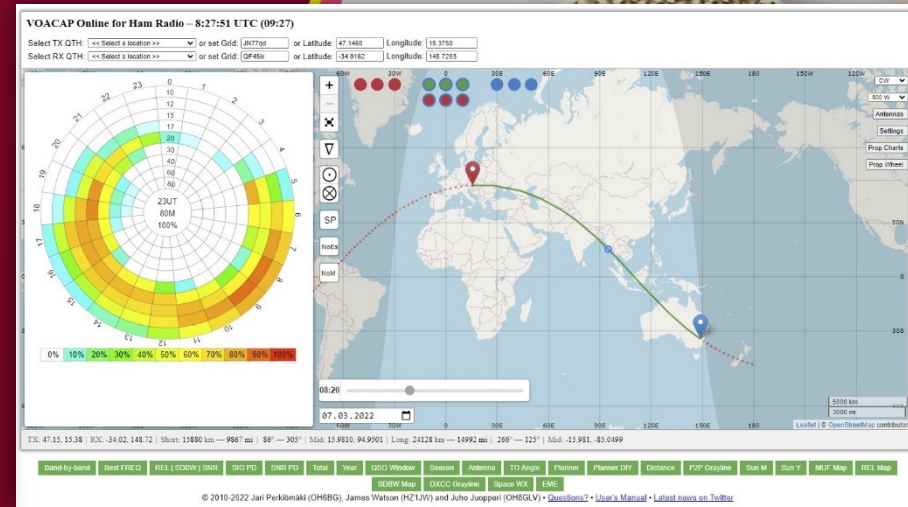
- Zusammenfassung der Daten von NOAA, NASA, ...
- Aktuelle Werte
- Die wichtigsten Daten auf einem Blick
- Links zu Details



VOACAP Online

<https://www.voacap.com/hf/>

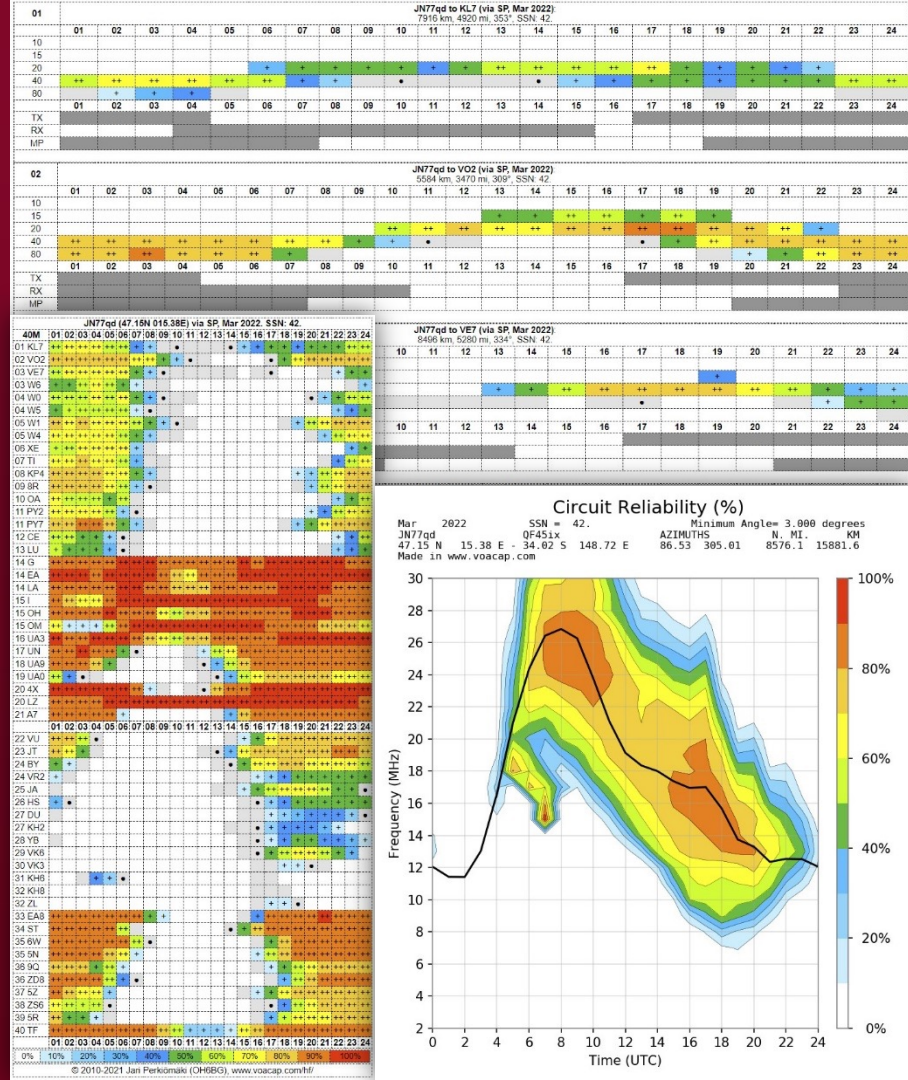
- Jari OH6BG, Jim MODNS & Juho OH8GLV
- Grafische Darstellung
- Unterstützt SSB, CW, FT8/FT4, WSPR
- Sehr viele Einstellungsmöglichkeiten
- Propagation Wheel SEHR praktisch
- Aktuelle Charts auf den Standort bezogen



VOACAP Online

<https://www.voacap.com/hf/>

- Antennenanalyse
- Vergleich Betriebsarten
- Unterschiedliche Auswertung per Band, Uhrzeit, Destination
- MUF Karten
- Greyline
- Zuverlässigkeit
- Planner pro Band oder Zone (sehr hilfreich!)



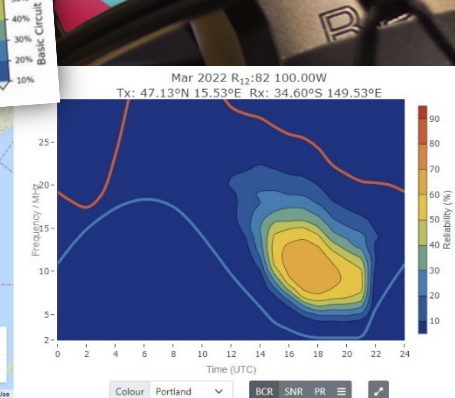
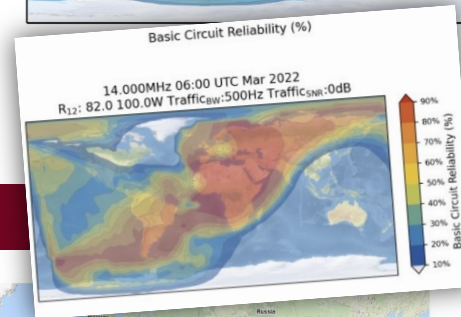
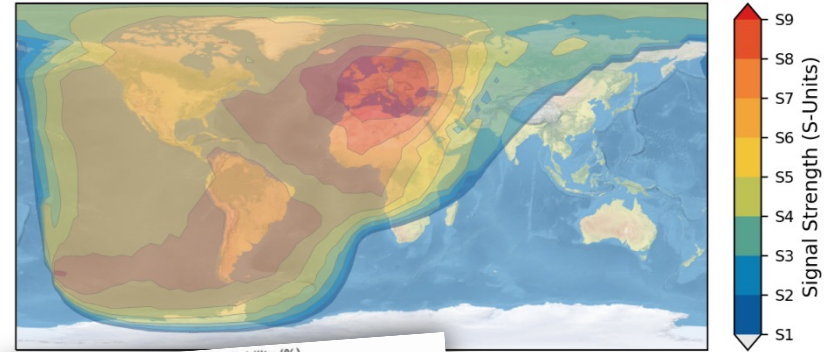
Proppy

<https://soundbytes.asia/proppy>

- Entwickelt von James Watson, MODNS auf Basis von ITURHFPROP
- Umfangreiche Einstellmöglichkeiten
- Viele Betriebsarten und Antennen
- Antennengewinn
- Man Made Noise
- Interaktive Vorhersagen (Area)
- P2P Point-to-Point Vorhersagen

Signal Strength (S-Units)

7.100MHz 06:00 UTC Mar 2022
R₁₂: 82.0 100.0W Traffic_{BW}:2500Hz Traffic_{SNR}:-29dB



Proppy

<https://soundbytes.asia/proppy>

- NCDXF/IARU Beacon in Echtzeit
 - Antennenauswahl
 - Antennengewinn
 - Alle Bänder
- Planner
 - Betriebsarten
 - Man Made Noise
 - Mehrere Zielgebiete
 - SP/LP

Proppy HF Circuit Prediction: NCDXF/IARU Beacons



Proppy HF Circuit Prediction: Monthly Planner



March 2022 (Dx=82.0) Propagation Planner - Reliability

ID	Name	Latitude
0	VK	-36.5879
1	KLP	66.0645
2	ZS	-31.4888
3	PY	-14.0771

Plot

Overlay: Basic Circuit Reliability
Format: .png

System

Date: Mar 2022
Traffic: SSB (Usable) (BW=3000Hz / SNR=6dB)
Power (W): 100.0
Man Made Noise: Rural
SSN Source: Standard Curves

Tx. Site

Tx. Site Name: G1
Latitude: 47.1000
Longitude: 15.4394
Ant Gain (dBi): 2.16



Real-Time Monitoring Tools

Tool

- Real-Time HF Propagation
- PSK-Reporter
- DXMaps.com
- WSPRnet
- Reverse Beacon Network RBN

Link

hamwaves.com/propagation
pskreporter.info/pskmap.html
dxmaps.com
wsprnet.org/drupal
www.reversebeacon.net

Real-Time HF Propagation

<https://hamwaves.com/propagation>













- Betrieben von Serge Stroobandt, ON4AA
- Zahlreiche Tools und Erklärungen
- Weiterführende Links
- MUF – Maximum Usable Frequency
- OWF – Optimum Working Frequency
- SSN – Sunspot Number

Real-Time HF Propagation Prediction

amateur radio
information technology
electromagnetic wave propagation
hamwaves.com

Serge Stroobandt, ON4AA
Copyright 2014–2021. CC BY-NC-SA
Markdown, makefile

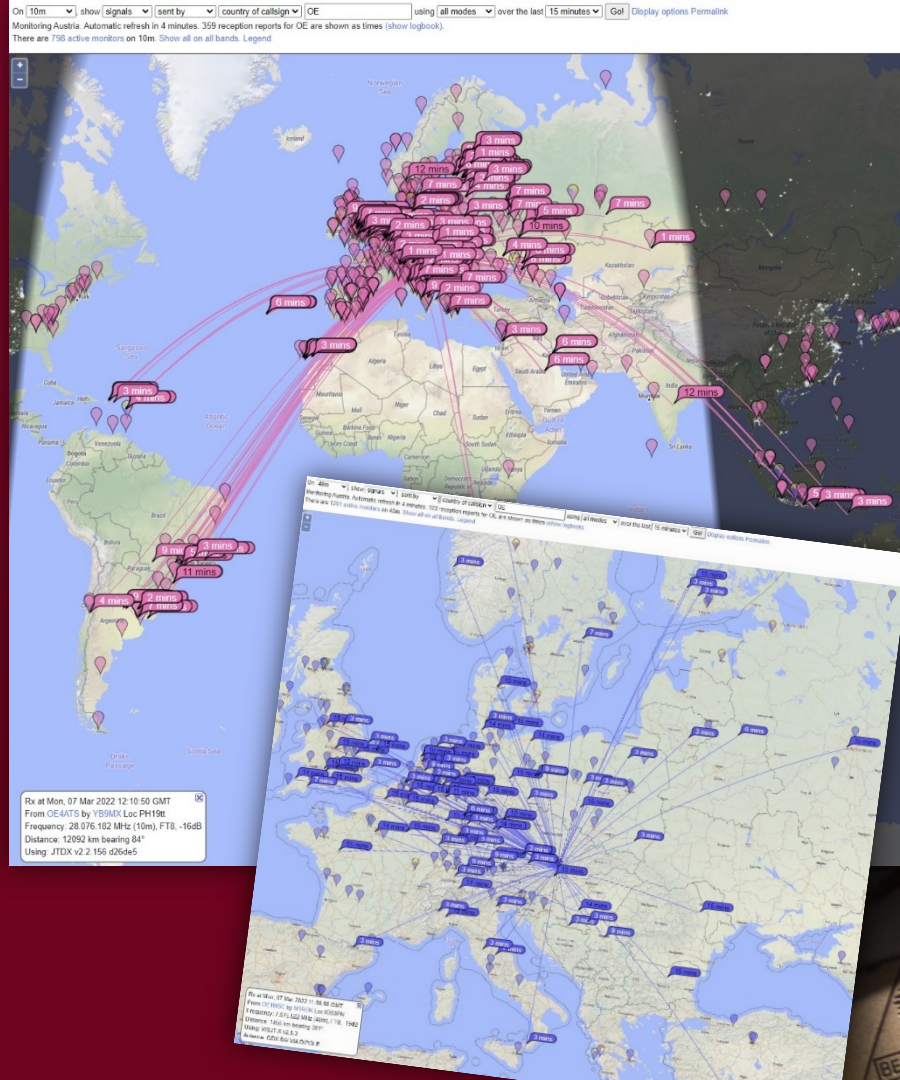
Home ► HF Propagation Prediction

MF & Lower HF	Space Weather	Higher HF
Real-Time Maximum NVIS Frequency: 7.675 MHz In <input type="text" value="Pruhonice"/> ¹	 Extreme-UV from Sunspots Enhances Ionisation	Real-Time Optimum Work Frequency: 22.3 MHz In <input type="text" value="Pruhonice"/>
Critical Freq. Sporadic E_s Blanket: 3.50 MHz In <input type="text" value="Pruhonice"/> ¹	 X-Ray Flares More D-Layer Absorption	Real-Time Max. Usable Frequency: 26.23 MHz In <input type="text" value="Pruhonice"/> ¹
 NVIS/DX Conditions < 10 MHz	 Polar Cap Absorption due to Solar Particles	Max. Usable Frequency Sporadic E_s: 18.62 MHz In <input type="text" value="Pruhonice"/> ²
Keep this site on-line <input type="button" value="Donate"/>	 Relativistic Electrons QRN	Sporadic E_s Timeline <input type="text" value="f<sub>o</sub>,E<sub>s</sub>"/>
More Information	 K_p Geomagnetic Disturbance Index Auroral Noise on Low HF	
 Ionogram Information	 Space Weather Alerts	Real-Time Effective Sunspot Number: 58.8 ³
 Reverse Beacon Network	Atmospheric Noise	 DX Propagation Prediction > 5 MHz
 HF Propagation Tutorials & Plates	 Lightning Strikes QRN & Sporadic E_s	Home 

PSK-Reporter

<https://pskreporter.info/pskmap.html>

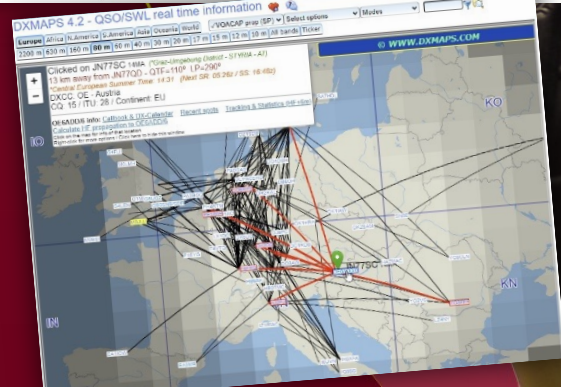
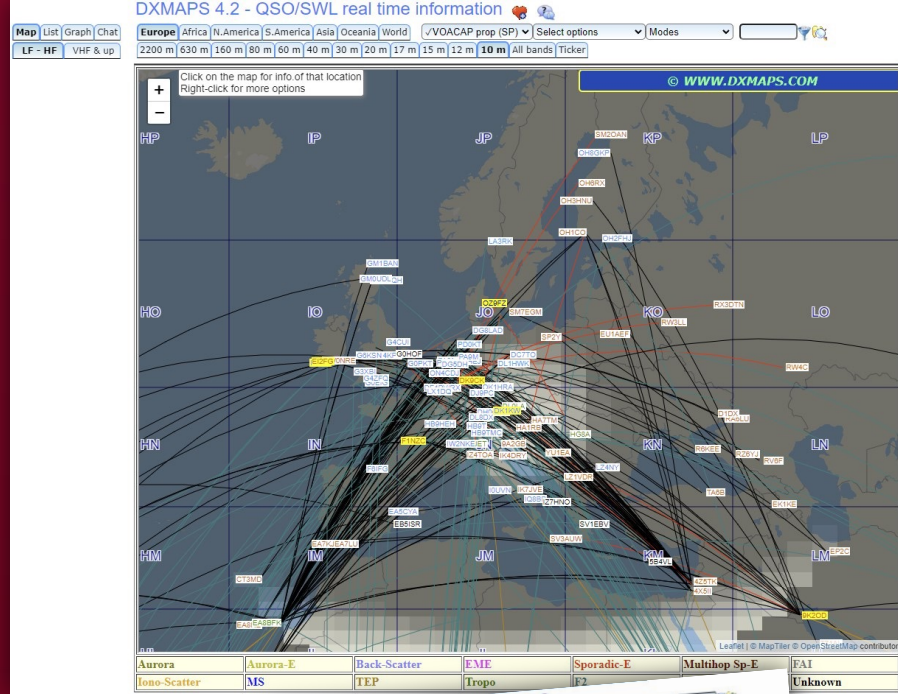
- Aktuelle Anzeige in Echtzeit
- Bandauswahl/alle Bänder
- Empfang nach
 - Rufzeichen
 - DXCC-Land
 - Gridsquare
- Betriebsart (Schwerpunkt digital)
- Signale oder Länder (übersichtlicher)



DXMaps

<https://dxmaps.com>

- Aktuelle Anzeige in Echtzeit
- Bandauswahl von 2200m-70cm
- Selektion nach Kontinent
- Unterschiedliche Ausbreitungspfade
 - Sporadic, F2, FAI, ...
- VOACAP Überlagerung
- Gut auch für 6m, 2m und 70cm



WSPR - Tools

Tool

- WSPR Echtzeit-Analysen
- WSPR-Challenge
- QSOMap
- WSPR WATT Tool
- WSPR Rocks

Link

- https://wspr.live/gui/d/o_qTGcqik/home?orgId=1
- <http://wspr.pe1itr.com/>
- <https://www.qsomap.org/wsprnet.php>
- <https://www.gm4eau.com/home-page/wspr/>
- <http://wspr.rocks/>

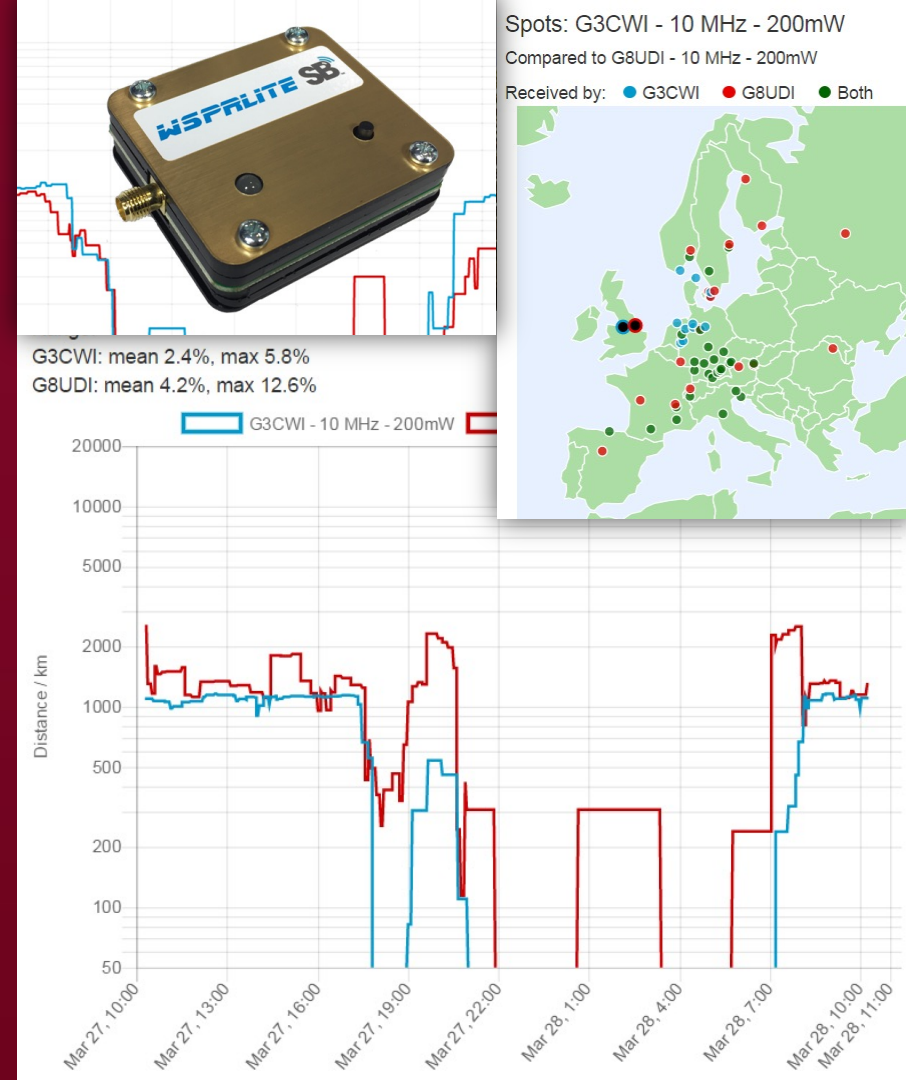


WSPRlite - DXplorer

<https://www.dxplorer.net/wsprlite>

<https://www.sotabeams.co.uk/>

- Sehr gut für Antennenvergleiche
- Optimal mit zwei Geräten
- Benötigt nur USB-Anschluss
- Flexi (630-6m), Classic (630-20m)
- 30 + 20m Out-of-the-Box (Classic)
- 160m-80m-40m mit externen Filtern
- Zugang zum Dxplorer.net Tool
- 200mW Output (= 1kW SSB, 80W CW)
- Windows & Android App



WSPR Desktop Transmitter

<https://www.zachtek.com>

- Gibt es in unterschiedlichen Varianten
 - Low: 2190m, 630m
 - MidPlus: 160-20m
 - HighPlus: 17-6m
 - 80To10: 80-10m
- Benötigt nur USB-Anschluss
- Eingebautes GPS + externe Antenne
- OpenSource Software
- 200mW Output
- Fertiggerät

The screenshot shows the 'WSPR Configuration' window of the ZachTek WSPR Desktop Transmitter software. The window is titled 'ZachTek WSPR Transmitter Configuration Version 1 - Revision 12'. It features several tabs: 'WSPR Beacon', 'Signal Generator', 'Boot Configuration', and 'Serial Port'. The 'WSPR Configuration' tab is active, showing settings for 'Device name' (WSPR TX), 'Call Sign' (DJ0DX), and 'Suffix' (1). The 'Band selection' section lists various frequency bands (LP, Band, Progress) with checkboxes and input fields. The 'Transmit Schedule' section includes options for '2 minutes (Default)', '10 minutes', '20 minutes', 'Band coordinated schedule', and 'Only when moving (Tracker)'. The 'Location' section has 'Auto (GPS)' selected, with a 'Manual' option set to 'JN59'. The 'Reported power' section is set to 'Normal mode' at '23 dBm'. The 'Program running' section shows 'WSPR Beacon' and 'Signal Generator' as 'Idle'. The 'Device Status' panel on the right shows 'Signal Quality' at 30%, 'UTC Time' at 15:53:20, and 'Position Lock' at JN59NL. An 'Az/EI plot of GPS Satellites' is also visible. The bottom of the window includes a 'Debug view' checkbox, a 'Read progress' indicator at 100%, and buttons for '(Re)Read Settings' and 'Save Settings'.



Ultimate3S (Bausatz)

<https://www.qrp-labs.com/ultimate3s>

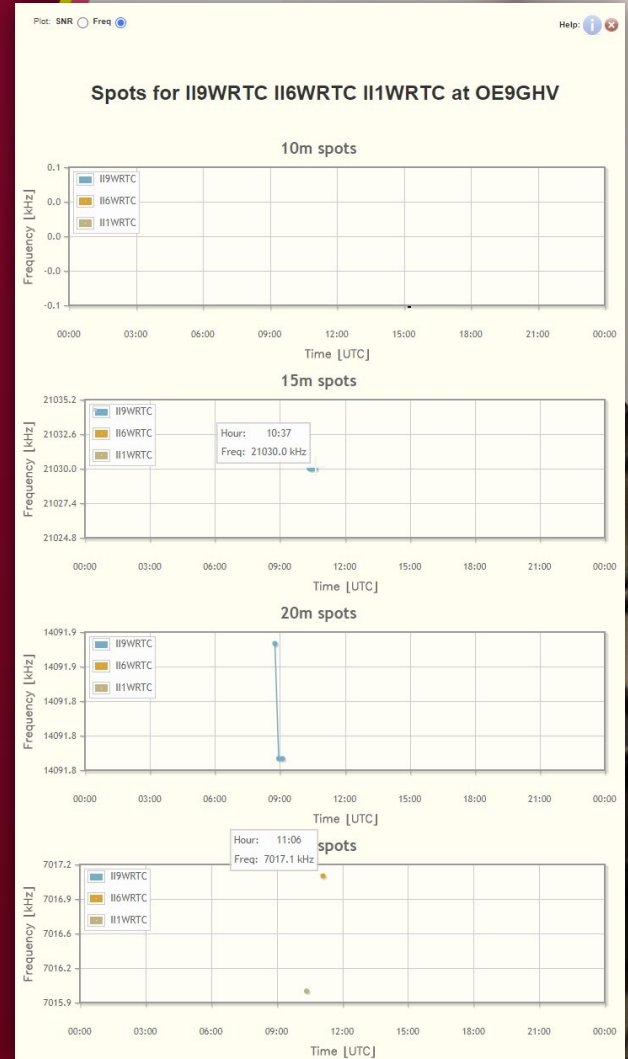
- Verschiedene Modi (WSPR, CW, JT9, JT65, QRSS, FSK, Opera, ...)
- Max. 6 HF-Bänder
- GPS-Anschluss (externes Gerät)
- Max. 250mW Output (30m)
- Bausatz - flexibel



Reverse Beacon Network

<https://www.reversebeacon.net>

- Für CW und RTTY, basiert auf Skimmer
- Monitoring-Stationen überall
- Update alle 10-11 Minuten
- Aggregator -> Verteilung von Server
- Wie ein DX-Cluster
 - telnet.reservebeacon.net:7000
- WICHTIG: Filter
 - www.ve7cc.net
 - Eigener Kontinent, nur Multis, ...



Tipps: Reverse Beacon Network

<https://www.reversebeacon.net>

- Multis, QSOs, Band-Monitoring, S&P Optimierung
- Basiert auf CW-/RTTY-Skimmer
 - Schwiege Unterscheidung S&P und Running
 - Daher: regelmäßig CQ oder TEST senden
- AR-Cluster haben ein Quality-Tag
 - set dx extension skimmerquality
 - V: valid (erkannt von mind. 3 Skimmer)
 - Q: qualified, QSX auf neue Frequenz
 - B: busted (korrektes Rufzeichen wird angezeigt)
 - ?: nur von 1-2 Skimmer-Stationen erkannt

```
abSknet - PuTTY
DX de DL0025S: 21317.0 OD5ZV
DX de OL50-#: 7031.8 DF3MC/P CW 17 dB 17 WPM CQ V 1310Z
DX de W3LFL-#: 24896.1 SMSDK CW 12 dB 23 WPM CQ V 1310Z
DX de ZL2RV-#: 3523.0 R3W CW 27 dB 31 WPM CQ V 1310Z
DX de JF1SGH-#: 14020.0 T33A CW 26 dB 35 WPM CQ V 1310Z
DX de KH6LC-#: 14020.0 T33A CW 19 dB 30 WPM CQ V 1310Z
DX de HB9DCO-#: 7011.1 HA4OQRR CW 07 dB 26 WPM CQ (HA4OQRP) B 1310Z
DX de IZ1UTA: 7118.0 IK8WE3/P DCI FZ126 DA1 BC0135 1310Z
DX de RZ3DVP-#: 28021.8 F8A1O CW 29 dB 22 WPM CQ ? 1310Z
DX de W4KAZ-#: 7050.0 KD3CA CW 21 dB 13 WPM CQ V 1310Z
DX de N4VN: 28021.8 F8A1O CW 19 dB 24 WPM CQ V 1310Z
DX de DK0TE-#: 28025.8 IK2SNT CW 05 dB 26 WPM CQ (IK2SND) B 1310Z
DX de HB9DCO-#: 14052.0 9H1BX CW 22 dB 25 WPM CQ ? 1310Z
DX de S5OARX-#: 14052.0 9H1BX CW 27 dB 24 WPM CQ V 1310Z
DX de PJ2T-#: 24896.0 SMSDK CW 06 dB 23 WPM CQ V 1310Z
DX de SB4AGN-#: 14052.1 9H1BX CW 12 dB 25 WPM CQ V 1310Z
DX de K1TTT-#: 14040.3 HB9DEH CW 11 dB 21 WPM CQ V 1310Z
DX de DK9IP-#: 14052.0 9H1BX CW 15 dB 25 WPM CQ V 1310Z
DX de DL9GTB-#: 21072.3 RA9LL/P BPSK 26 dB 31 BPS CQ ? 1310Z
DX de HA6PX-#: 14052.1 9H1BX CW 16 dB 24 WPM CQ V 1310Z
DX de DL8LAS-#: 14052.0 9H1BX CW 13 dB 24 WPM CQ V 1310Z
DX de K3LR-#: 14052.1 9H1BX CW 10 dB 24 WPM CQ V 1310Z
DX de SK3W-#: 14052.0 9H1BX CW 19 dB 24 WPM CQ V 1310Z
```

The screenshot displays the Reverse Beacon Network (RBN) software interface. It features several panels:

- Top Left:** A status panel showing "All bands - All modes" and "Moving graph computed on 15 min Contingential Distribution".
- Top Center:** A "Statistics" panel with a bar chart showing signal strength distribution.
- Top Right:** A "DX Cluster announcements" window listing various stations and their quality tags (e.g., V, Q, B, ?).
- Bottom Left:** A "QSO" list table with columns for QSO, Bd, Time, Call Sign, Spt, and Rcvd.
- Bottom Center:** A "Check DX cluster announcements window" with a legend for quality tags: V (Valid spots), B (Busted spots), Q (Qualified), and ? (Undertermined spot).

Tipps: Reverse Beacon Network

<https://www.reversebeacon.net>

- Stelle sicher, dass die Skimmer DICH hören
- RBN spottet alle, nicht nur DX
 - Kleinere PileUps, weniger Konkurrenz
- RBN erleichtert die Suche nach freien Frequenzen
- Zeigt Bandöffnungen, wo DU gehört wirst
- WICHTIG:
 - Konstante CW-Geschwindigkeit (KEIN >/< oder +++/---)
 - CQ und TEST im Text, Rufzeichen 2x (Kurzurufzeichen)
 - CW am besten vom Computer generiert
 - Ab und zu kleine Frequenzänderungen -> neuer Spot



Tipps: Reverse Beacon Network

<https://www.reversebeacon.net>

- CC-Cluster sehr hilfreich
 - dxcc.ve7cc.net:23
 - Filter-Definition, entfernt Uniques + doppelte Spots
- Sehr gutes Analyse-Tool
 - CQ mit Rufzeichen in CW oder RTTY rufen
 - Antenne drehen -> wiederholen
 - RBN-Webseite -> Spot Analysis Tool
 - Download Spots - ALLE Spots seit Februar 2009 sind archiviert!
- Eigener Skimmer: QS1R (7) oder Red Pitaya/STEMlab (8)
+ Entkopplung vom Sendesignal -> Remote Skimmer
 - <http://pavel-demin.github.io/red-pitaya-notes/sdr-receiver-hpsdr/>

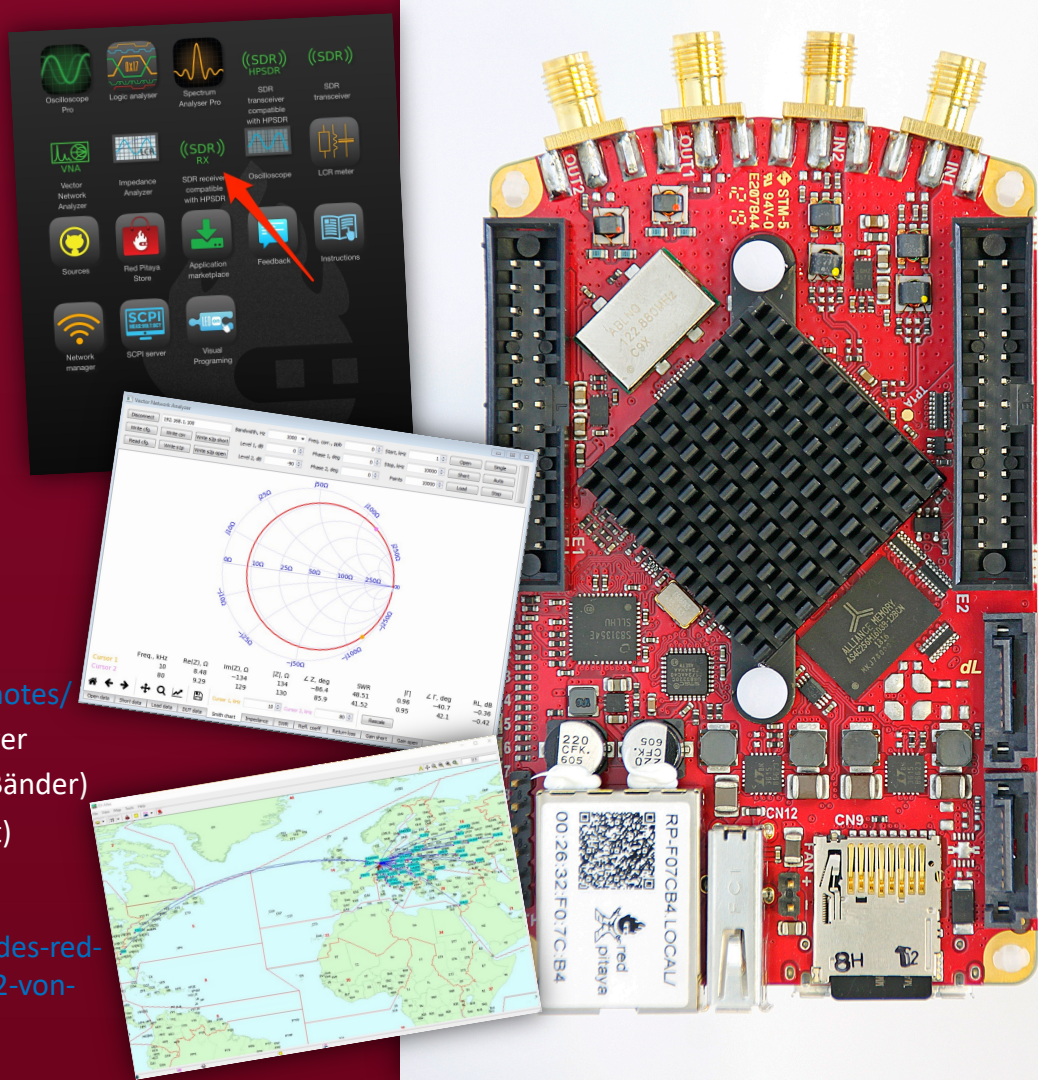


Red Pitaya/STEMlab

<https://www.redpitaya.com/>

- Red Pitaya
 - Oszilloskop, Signalgenerator
 - Spectrum Analyzer
 - Logic Analyzer, Bode Analyzer
 - Apps Pavel Demin
 - <http://pavel-demin.github.io/red-pitaya-notes/>
 - SDR Receiver/Transceiver + Skimmer Server
 - Multiband WSPR and FT8 Transceiver (8 Bänder)
 - Vector Network Analyzer (+ Python-Client)
 - Link (deutsch)

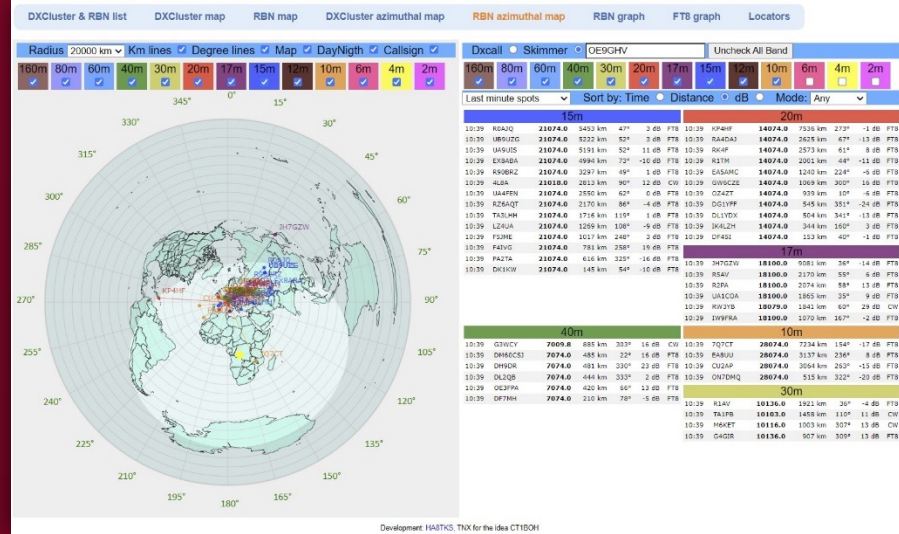
<https://saure.org/cq-nrw/2021/04/01/verwendung-des-red-pitaya-sdr-lab-im-reverse-beacon-network-teil-1-teil-2-von-pete-smith-n4zr-aus-dem-red-pitaya-blog/>



HA8TKS DX-Cluster

<https://dxcluster.ha8tk.hu>

- Basierend auf RBN + PSKReporter
- Zahlreiche Filter und Darstellungen
- Vorzugsskimmer wählbar
- DX-Cluster
- RBN- und FT8-Graph (10 Sekunden)
- Bandauswahl
- Frequenzbereich einstellbar
- Filter nach Skimmer-Standort
- Verlinkung zu versch. Datenbanken





Nachbearbeitung

- Bearbeitung

- ADIF Master

www.dxshell.com/adif-master.html

- Contest LogChecker

www.dxshell.com/logchecker.html

- Statistiken und Auswertungen

- SH5

sites.google.com/site/sh5analyzer/

- QScope

qscope.com

- Mapping Tools

www.mapability.com/ei8ic/index.php

ADIF Master

<http://www.dxshell.com/adif-master.html>

- Konvertiert Cabrillo, ADX, TR und CT Logs in ADIF-Dateien
- Komfortables Editieren
- Hinzufügen, Löschen und Modifizieren von ADIF Tags und Einträgen
- Läuft ab Windows 98 ;)

Line	CALL	QSO_DATE	TIME_ON	TIME_OFF	BAND	STATION_CALLSIGN	FREQ	CONTEST_ID	FREQ_RX	MODE	RST_RCVD	RST_SENT	TX_PWR	OPERATOR	CQZ	STX	APP_ZONE_POS	APP_ZONE_LEN	APP_ZONE_RATIO	APP_ZONE_CONTINENT	APP_ZONE_SUBZONE	APP_ZONE_INTERFACED
1	HC8BI	20211030	010807	010807	40M	OE6Z	7.1750	OE6Z	7.1750	SSB	59	59			1	1				1		
2	HR8E	20211030	010853	010853	40M	OE6Z	7.137	OE6Z	7.137	SSB	59	59			1	1				1		
3	RM4F	20211030	011305	011305	160M	OE6Z	1.8747	OE6Z	1.8747	SSB	59	59			1	1				1		
4	OH6RZ	20211030	011415	011415	160M	OE6Z	1.8743	OE6Z	1.8743	SSB	59	59			1	1				1		
5	EW5A	20211030	011433	011433	160M	OE6Z	1.8773	OE6Z	1.8773	SSB	59	59			1	1				1		
6	PE1H	20211030	011496	011496	160M	OE6Z	1.8894	OE6Z	1.8894	SSB	59	59			1	1				1		
7	DF0HQ	20211030	011511	011511	160M	OE6Z	1.8644	OE6Z	1.8644	SSB	59	59			1	1				1		
8	M6T	20211030	011538	011538	160M	OE6Z	1.8557	OE6Z	1.8557	SSB	59	59			1	1				1		
9	DF0HW	20211030	011604	011604	160M	OE6Z	1.8474	OE6Z	1.8474	SSB	59	59			1	1				1		
10	DF0HQ	20211030	011643	011643	160M	OE6Z	1.8494	OE6Z	1.8494	SSB	59	59			1	1				1		
11	DF0HW	20211030	011700	011700	160M	OE6Z	1.8596	OE6Z	1.8596	SSB	59	59			1	1				1		
12	SN7D	20211030	011700	011700	160M	OE6Z	1.8456	OE6Z	1.8456	SSB	59	59			1	1				1		
13	SN7D	20211030	011758	011758	160M	OE6Z	1.8794	OE6Z	1.8794	SSB	59	59			1	1				1		
14	DF0HW	20211030	011834	011834	160M	OE6Z	1.8930	OE6Z	1.8930	SSB	59	59			1	1				1		
15	Y7SA	20211030	012043	012043	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
16	HA3OU	20211030	012056	012056	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
17	SNOR	20211030	012107	012107	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
18	OE1XTU	20211030	012125	012125	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
19	E74Y	20211030	012158	012158	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
20	LY2OU	20211030	012220	012220	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
21	YQ8RZJ	20211030	012354	012354	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
22	HF7A	20211030	012430	012430	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
23	GZX	20211030	012430	012430	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
24	DLOVVV	20211030	012557	012557	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
25	E70E	20211030	012627	012627	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
26	UA3BL	20211030	012722	012722	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
27	E7DX	20211030	012732	012732	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		
28	UT7CR	20211030	012745	012745	160M	OE6Z	1.9030	OE6Z	1.9030	SSB	59	59			1	1				1		

ADIFMaster - H:\AFU\Contest\OE6Z\OE6Z_CQ_WW_SSB_2021 adi

Line	CALL	QSO_DATE	TIME_ON	TIME_OFF	BAND	STATION_CALLSIGN	FREQ	CONTEST_ID	FREQ_RX	MODE	RST_RCVD	RST_SENT
1	KC1XX	20211030	010337	010337	40M	OE6Z	7.1750	OE6Z	7.1750	SSB	59	59
2	K1KI	20211030	010853	010853	40M	OE6Z	7.13700	OE6Z	7.13700	SSB	59	59
3	RM4F	20211030	011305	011305	160M	OE6Z	1.87437	OE6Z	1.87437	SSB	59	59
4	OH6RZ	20211030	011415	011415	160M	OE6Z	1.87703	OE6Z	1.87703	SSB	59	59
5	EW5A	20211030	011433	011433	160M	OE6Z	1.87173	OE6Z	1.87173	SSB	59	59
6	P14M	20211030	011446	011446	160M	OE6Z	1.86844	OE6Z	1.86844	SSB	59	59
7	DF0HQ	20211030	011511	011511	160M	OE6Z	1.85574	OE6Z	1.85574	SSB	59	59
8	M6T	20211030	011538	011538	160M	OE6Z	1.84740	OE6Z	1.84740	SSB	59	59
9	OK7W	20211030	011604	011604	160M	OE6Z	1.84940	OE6Z	1.84940	SSB	59	59
10	UT6UD	20211030	011619	011619	160M	OE6Z	1.85098	OE6Z	1.85098	SSB	59	59
11	DP7D	20211030	011643	011643	160M	OE6Z	1.87994	OE6Z	1.87994	SSB	59	59
12	S56X	20211030	011700	011700	160M	OE6Z	1.85456	OE6Z	1.85456	SSB	59	59
13	SN7D	20211030	011758	011758	160M	OE6Z	1.89300	OE6Z	1.89300	SSB	59	59
14	ETG0UB	20211030	011834	011834	160M	OE6Z	1.87994	OE6Z	1.87994	SSB	59	59
15	Y7SA	20211030	012043	012043	160M	OE6Z	1.89300	OE6Z	1.89300	SSB	59	59
16	HA3OU	20211030	012056	012056	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
17	SNOR	20211030	012107	012107	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
18	OE1XTU	20211030	012125	012125	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
19	E74Y	20211030	012158	012158	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
20	LY2OU	20211030	012220	012220	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
21	YQ8RZJ	20211030	012354	012354	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
22	HF7A	20211030	012430	012430	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
23	GZX	20211030	012430	012430	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
24	DLOVVV	20211030	012557	012557	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
25	E70E	20211030	012627	012627	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
26	UA3BL	20211030	012722	012722	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
27	E7DX	20211030	012732	012732	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59
28	UT7CR	20211030	012745	012745	160M	OE6Z	1.90300	OE6Z	1.90300	SSB	59	59

- Add Serial Number
- Replace
- Replace In Selection
- Find In Column
- Remove Alpha
- Remove Numeric
- Remove Symbols
- Remove Left Char
- Remove Right Char
- Trim Column
- Autosize Columns
- Insert Column
- Insert Row
- Combine Columns
- Duplicate Column
- Move Row Up
- Move Row Down
- Delete Column
- Delete Row

Contest LogChecker

<http://www.dxshell.com/logchecker.html>

- Tool-Set zum Bearbeiten, Editieren und Verifizieren von Contest-Logs
 - Cabrillo Doctor
 - Log Calculator/Converter
 - Log Checker
- Überprüfen des Cabrillo-Formats
- Verifizieren der Rufzeichen (Master DB, FCC, ...)
- Konvertierung ADIF, Cabrillo und Excel CSV
- Statistiken für die verbreiteten Bewerbe
- Export in RTF, PDF und HTML (Webseiten)
- Komfortable Druckfunktionen

The screenshot displays the Log Calculator application interface. At the top, there is a menu bar with options: File, Edit, Settings, View, Help. Below the menu is a toolbar with icons for file operations and a search function. The main window is divided into several sections:

- Statistics:** A summary table showing overall contest performance.
- Log Table:** A detailed table of log entries with columns for QSO, Frequency, Mode, Date, Time, Operator, RST, Sent, Callsign, RST, Rcvd, Points, CQ Zones, and DVCC.
- Summary Table:** A table showing counts for QSOs, Points, Multiplier, and Band Score.
- Final Score:** A section displaying the final score and a contest chart.
- Log Converter:** A window for converting log formats, showing a table of call signs, QSO dates, times, and band information.
- Contest Parameters:** A dialog box for selecting contest parameters, including a dropdown for the station (set to OE2Z) and a checkbox for extended Cabrillo modes.

QSO	Frequency	Mode	Date	Time	Operator	RST	Sent	Callsign	RST	Rcvd	Points	CQ Zones	DVCC
001	7137	PH	2021-10-30	0103	OE2Z	59	15	HC3RX	59	15	0	1	1
002	7137	PH	2021-10-30	0109	OE2Z	59	15	KJ2C	59	15	0	1	1
003	1874	PH	2021-10-30	0113	OE2Z	59	15	RH4F	59	15	1	1	1
004	1877	PH	2021-10-30	0114	OE2Z	59	15	CH6RX	59	15	1	1	1
005	1872	PH	2021-10-30	0114	OE2Z	59	15	EV5A	59	15	1	1	1
006	1868	PH	2021-10-30	0114	OE2Z	59	15	PK4M	59	15	1	1	1
007	1865	PH	2021-10-30	0115	OE2Z	59	15	DF0HQ	59	14	1	1	1
008	1856	PH	2021-10-30	0115	OE2Z	59	15	M6T	59	14	1	1	1
009	1847	PH	2021-10-30	0116	OE2Z	59	15	OK7W	59	15	1	1	1
010	1849	PH	2021-10-30	0116	OE2Z	59	15	UT6UD	59	15	1	1	1
011	1851	PH	2021-10-30	0116	OE2Z	59	15	DP7D	59	14	1	1	1
012	1855	PH	2021-10-30	0117	OE2Z	59	15	S56X	59	15	1	1	1
013	1880	PH	2021-10-30	0117	OE2Z	59	15	SN7D	59	15	1	1	1
014	1893	PH	2021-10-30	0118	OE2Z	59	15	ES5QB	59	14	1	1	1
015	1903	PH	2021-10-30	0120	OE2Z	59	15	YB4A	59	14	1	1	1
016	1903	PH	2021-10-30	0120	OE2Z	59	15	HA3OU	59	15	1	1	1
017	1903	PH	2021-10-30	0121	OE2Z	59	15	SNR	59	15	1	1	1
018	1903	PH	2021-10-30	0121	OE2Z	59	15	OE1TU	59	15	0	1	1
019	1903	PH	2021-10-30	0121	OE2Z	59	15	EW7	59	15	1	1	1
020	1903	PH	2021-10-30	0122	OE2Z	59	15	LY2OU	59	15	1	1	1
021	1903	PH	2021-10-30	0123	OE2Z	59	15	Y0IRZJ	59	20	1	1	1
022	1903	PH	2021-10-30	0124	OE2Z	59	15	HFA	59	15	1	1	1

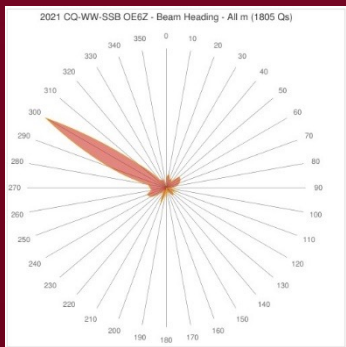
David	QSOs	Points	Multiplier	Band Score
160H	48	47	26	1222
40H	2	6	2	12

Line	CALL	QSO_DATE	TIME_ON	TIME_OFF	BAND	STATION_CALLSIGN	FREQ	CONTEST_ID	FREQ_RX	MODE	RST_RCV	RST_SENT
1	KC1XX	20211030	010337	010337	40M	OE2Z	7.1755	CQ-WW-SSB	7.17550	SSB	59	59
2	KJ2C	20211030	010853	010853	40M	OE2Z	7.137	CQ-WW-SSB	7.13700	SSB	59	59
3	RH4F	20211030	011305	011305	160M	OE2Z	1.87437	CQ-WW-SSB	1.87437	SSB	59	59
4	CH6RX	20211030	011415	011415	160M	OE2Z	1.87703	CQ-WW-SSB	1.87703	SSB	59	59
5	EV5A	20211030	011433	011433	160M	OE2Z	1.87173	CQ-WW-SSB	1.87173	SSB	59	59
6	PK4M	20211030	011446	011446	160M	OE2Z	1.86844	CQ-WW-SSB	1.86844	SSB	59	59
7	DF0HQ	20211030	011511	011511	160M	OE2Z	1.86543	CQ-WW-SSB	1.86543	SSB	59	59
8	M6T	20211030	011538	011538	160M	OE2Z	1.8557	CQ-WW-SSB	1.85570	SSB	59	59
9	OK7W	20211030	011604	011604	160M	OE2Z	1.8474	CQ-WW-SSB	1.84740	SSB	59	59
10	UT6UD	20211030	011619	011619	160M	OE2Z	1.8494	CQ-WW-SSB	1.84940	SSB	59	59
11	DP7D	20211030	011643	011643	160M	OE2Z	1.85098	CQ	Contest Parameters			
12	S56X	20211030	011700	011700	160M	OE2Z	1.85456	CQ	Contest Parameters			
13	SN7D	20211030	011758	011758	160M	OE2Z	1.87994	CQ	Contest Parameters			
14	ES5QB	20211030	011834	011834	160M	OE2Z	1.893	CQ	Contest Parameters			
15	YB4A	20211030	012043	012043	160M	OE2Z	1.903	CQ	Contest Parameters			
16	HA3OU	20211030	012056	012056	160M	OE2Z	1.903	CQ	Contest Parameters			

SH5 Contest Log Analyzer

<https://sites.google.com/site/sh5analyzer/>

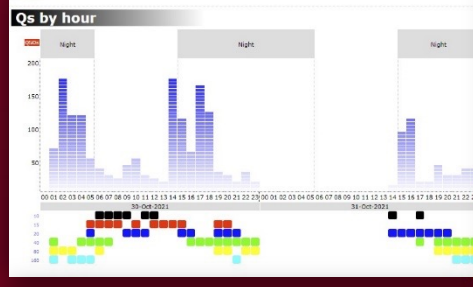
- Vielzahl an Statistiken
- Alle Statistiken in HTML-Format
- N1MM, Win-Test, Writelog, TR4W, ...
- Erstellt KMZ-Dateien für Google Earth
- Optisch sehr ansprechend



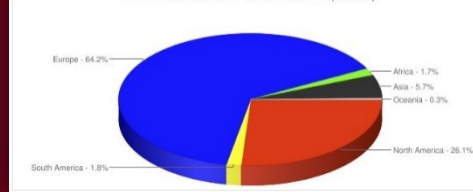
SH5 2021 CO-WW-SSB OE6Z

QSL	Time	Mode	Date, time	Op	Callsign	Cont.	Country	Dx, Lat	Head.	In MASTER	Dist	CO	ITU	ix
1	1937Z	PH	30-Oct-2021 01:03	OK	KC1CX	NA	K United States	6520 300			5	8		
2	1938Z	PH	30-Oct-2021 01:06	OK	K1K1	NA	K United States	5648 203			5	8		
3	1874Z	PH	30-Oct-2021 01:13	OK	R4MF	EU	UA European Russia	2020 64			16	29		
4	1877Z	PH	30-Oct-2021 01:14	OK	OH8XK	EU	OH Finland	1488 7			15	18		
5	1875Z	PH	30-Oct-2021 01:14	OK	Y4SA	EU	EA European Russia	1960 47			16	29		
6	1858Z	PH	30-Oct-2021 01:14	OK	F14E	EU	PA Netherlands	890 312			14	27		
7	1856Z	PH	30-Oct-2021 01:15	OK	DF0HQ	EU	DL Fed. Rep. of Germany	480 299			14	27		
8	1855Z	PH	30-Oct-2021 01:15	OK	14EF	EU	G England	1210 297			14	27		
9	1847Z	PH	30-Oct-2021 01:16	OK	OK7W	EU	OK Czech Republic	220 0			15	29		
10	1849Z	PH	30-Oct-2021 01:16	OK	UR8SD	EU	UR Ukraine	1000 72			16	29		
11	1850Z	PH	30-Oct-2021 01:16	OK	SP7D	EU	EU Fed. Rep. of Germany	830 306			14	28		
12	1854Z	PH	30-Oct-2021 01:17	OK	S5SK	EU	SJ Slovenia	220 180			15	28		
13	1876Z	PH	30-Oct-2021 01:17	OK	SP17D	EU	SP Poland	520 31			15	28		
14	1849Z	PH	30-Oct-2021 01:18	OK	1E5SGB	EU	EE Iceland	1760 297			14	27		
15	1803Z	PH	30-Oct-2021 01:20	OK	1Y8A	EU	YU Serbia	540 144			15	28		
16	1903Z	PH	30-Oct-2021 01:20	OK	H4QJQ	EU	HA Hungary	260 148			15	28		
17	1903Z	PH	30-Oct-2021 01:21	OK	1SNOR	EU	SP Poland	460 17			15	28		
18	1903Z	PH	30-Oct-2021 01:21	OK	OE1YTU	EU	OE Austria	310 251		NO	15	28		
19	1903Z	PH	30-Oct-2021 01:21	OK	EA7	EU	EA Bosnia-Herzegovina	670 160			15	28		
20	1903Z	PH	30-Oct-2021 01:22	OK	1Y2UD	EU	LY Lithuania	780 30			15	29		
21	1903Z	PH	30-Oct-2021 01:23	OK	1Y2BZ	EU	YO Romania	780 103		NO	20	28		
22	1903Z	PH	30-Oct-2021 01:24	OK	1P7FA	EU	SP Poland	460 17			15	28		
23	1903Z	PH	30-Oct-2021 01:24	OK	G2K	EU	G England	1340 296			14	27		
24	1903Z	PH	30-Oct-2021 01:25	OK	DL4WV	EU	DL Fed. Rep. of Germany	590 284			14	28		
25	1903Z	PH	30-Oct-2021 01:26	OK	1E7DE	EU	EA Bosnia-Herzegovina	440 180		NO	15	28		
26	1903Z	PH	30-Oct-2021 01:27	OK	1U4BL	EU	UA European Russia	1370 53			16	29		
27	1903Z	PH	30-Oct-2021 01:27	OK	1E7DK	EU	EA Bosnia-Herzegovina	440 180			15	28		
28	1903Z	PH	30-Oct-2021 01:27	OK	1UTYK	EU	UA Ukraine	1170 79			16	29		
29	1903Z	PH	30-Oct-2021 01:27	OK	RJ1A	EU	UA European Russia	1360 31			15	29		
30	1903Z	PH	30-Oct-2021 01:28	OK	1LQKZ	EU	UR Ukraine	1330 72		NO	16	29		
31	1903Z	PH	30-Oct-2021 01:29	OK	1EUR	EU	EU Belarus	1090 61			16	29		
32	1903Z	PH	30-Oct-2021 01:29	OK	83VW	EU	ES Estonia	1330 20			15	28		
33	1902Z	PH	30-Oct-2021 01:32	OK	1S59WR	EU	SJ Slovenia	260 215		NO	15	29		
34	1902Z	PH	30-Oct-2021 01:32	OK	1A23QR	EU	HA Hungary	180 126		NO	15	28		
35	1902Z	PH	30-Oct-2021 01:32	OK	1S4WV	EU	OK Czech Republic	110 0			15	28		
36	1902Z	PH	30-Oct-2021 01:33	OK	1SPR7L	EU	SP Poland	180 52			15	28		
37	1902Z	PH	30-Oct-2021 01:34	OK	OK1LID	EU	OK Czech Republic	310 292			15	28		
38	1902Z	PH	30-Oct-2021 01:35	OK	1G4HW	EU	DL Fed. Rep. of Germany	720 312			14	28		
39	1902Z	PH	30-Oct-2021 01:35	OK	1A1TT	EU	HA Hungary	110 180			15	28		
40	1902Z	PH	30-Oct-2021 01:36	OK	OK2HQP	EU	OK Czech Republic	180 52			15	28		
41	1902Z	PH	30-Oct-2021 01:36	OK	1Y2VMD	EU	LV Luxembourg	790 304		NO	14	27		

OE6Z



2021 CO-WW-SSB OE6Z - Continents - All m (1805 Qs)



OE6Z

Possible errors

#	Callsign in log	Corrected
1	2E0EVM	2E0EBM
2	CT1JOH	CT1BOH
3	DL1EMA	DL1SMA DL1EJA DL1EMY
4	DL1FKB	DL1NKB
5	DL1GRC	DL1GKC
6	DL2MHM	DL2MHO
7	HB9DQY	HB9DAQ HB9DCM
8	HB9TTV	WB9TVV
9	HB9TWU	HB9TWM
10	IK4RQF	IK4RQE IK4RQJ
11	ISO0NU	ISOANT
12	IU0APU	IU0APV
13	IW1RLS	IW1RSL
14	OH8GT	OH8GET
15	SP5PDA	SP5PDB
16	SQ9NFC	SQ9NFD
17	VA3POX	VA3ZDX VA3PLX VA3PDG
18	WB2KHO	WB2KAO WB2KHE
19	4X1MM	4X1IM 4X1OM
20	9A2ZI	9A2KI
21	9A6KX	9A6XX
22	DF9HC	DF9YC
23	DJ2TG	DK2TG DL2TG DJ2RG
24	DJ9UN	DJ3UN DJ9BN DJ9CN DJ9SN
25	DK1GP	DK11P DK1PP DK1VP DK1YP DK1GW
26	DK2AM	DK2VM DK2AR DK2AT DK2AY
27	DK2YQ	DK2DQ DK2YL

Global Overlay Mapper

<https://www.mapability.com/ei8ic>

- Unterschiedliche Mapping-Programme
- Global Overlay Mapper GOM
 - Deckt die ganze Welt ab
 - Importiert ADIF, Cabrillo, ...
 - Anzeige von allen QSOs, Grid Locators, Counties, CQ und ITU Zonen
 - 37 unterschiedliche Karten, Zoom
 - 4 verschiedene Projektionen
 - Band/Mode-Anzeige pro Spot
 - Unterschiedliche Marker
 - Gearbeitete Länder u.v.m.





ContestOnline Score Boards

Tool

- Contest Online ScoreBoard
- Online Contest Server
- Contest Score Rumors

Link

contestonlinescore.com
cqcontest.net
3860scores.com

Contest Online ScoreBoard

<https://contestonlinescore.com>

- Von Victor VA2WA, Alex K2BB & Randy K5ZD
- 400+ unterstützte Wettbewerbe
- Echtzeit-Scoreboard
- Support von N1MM+, WinTest, TRLog (Linux), Skookum Logger (Mac), UCXLog, WriteLog, ...
- Band-Breakdowns
- Sehr motivierend
- Ausgezeichnet für Vergleiche
- Man kann definieren, was man in welchem Intervall hochladen will
- Club Competition
- Tutorials & Log-Konfigurationen

Contest Online ScoreBoard 97 Mar 2022 18:55 UTC ARRL DX SSB (05 Mar 06z - 07 Mar 02z)

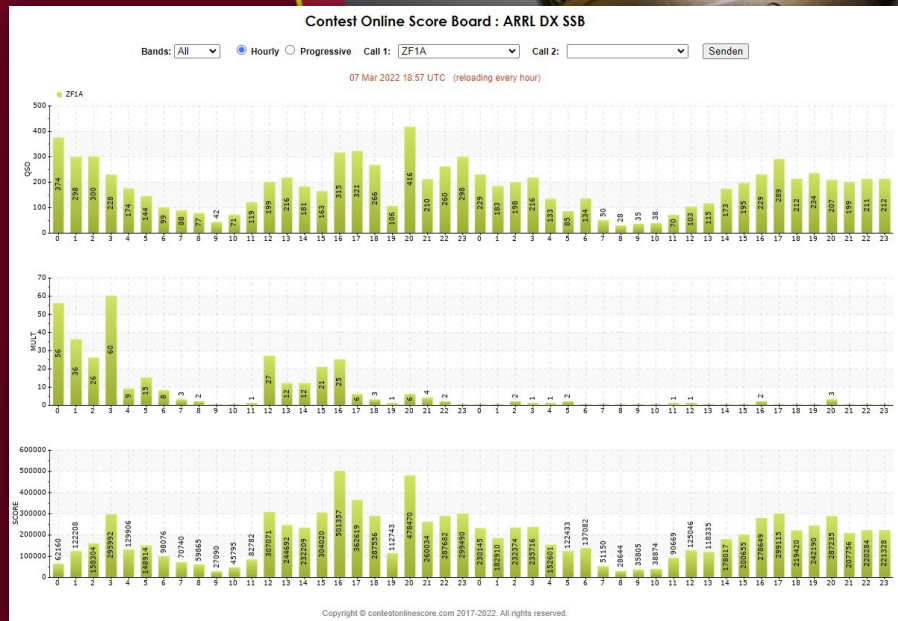
Close: ARRL DX SSB Highest rate: 428 qth by PY5AMF Powered by ICOM

Home Login Filter View Clear Filter Breakdown Clubs Teams Manual post Archive Supported contests Help with logger set up Blog

Rank	HP	Score	QSO	States/Prov./Countries	Last
1	K3LR	10,711,272	6,243	572	18:42 North Coast Contesters
2	H3LT	5,230,746	6,005	291	18:55 Loma del Toro DX Club
3	K1TTT	4,928,652	3,537	474	18:57 Yankee Clipper Contest Club
4	N1RR	1,876,392	1,752	357	18:46 Yankee Clipper Contest Club
5	NC1CC	1,586,672	1,520	352	19:21 Yankee Clipper Contest Club
6	K1MP	1,353,312	1,451	304	18:58 Yankee Clipper Contest Club
7	IOA	880,295	1,463	155	18:45 Italian Contest Club
8	PY2KC	566,190	1,165	162	N/A Aracania DX Group

Rank	HP	Score	QSO	States/Prov./Countries	Last
1	W3LPL	7,550,550	4,801	525	18:51 PVRC
2	ED7W	4,406,904	5,050	291	18:42 EA CONTES CLUB
3	W2MRM	2,835,000	2,312	380	18:41 Frankford Radio Club
4	K1DW	2,037,699	1,857	373	18:41 Jefferson ARC
5	9A9Z	1,986,012	2,982	222	18:44 Radio Klub Zagreb
6	HB9NE	1,658,933	2,674	207	21:50 Italian Contest Club
7	K17E	1,424,241	1,740	273	18:41 Willamette Valley DX Club
8	K2DM	431,790	560	257	N/A The Villages Amateur Radio Club

Rank	HP	Score	QSO	States/Prov./Countries	Last
1	ZF1A	9,116,209	8,743	348	18:45
2	J68HZ	7,510,158	8,262	303	18:48 Potomac Valley Radio Club
3	TM6M	4,269,453	4,963	289	18:42 Contest Group du Quebec
4	CQ8M	3,517,908	4,132	284	18:41 CUZARA
5	ND7K	2,625,480	2,414	374	18:48 Arizona Outlaws Contest Club



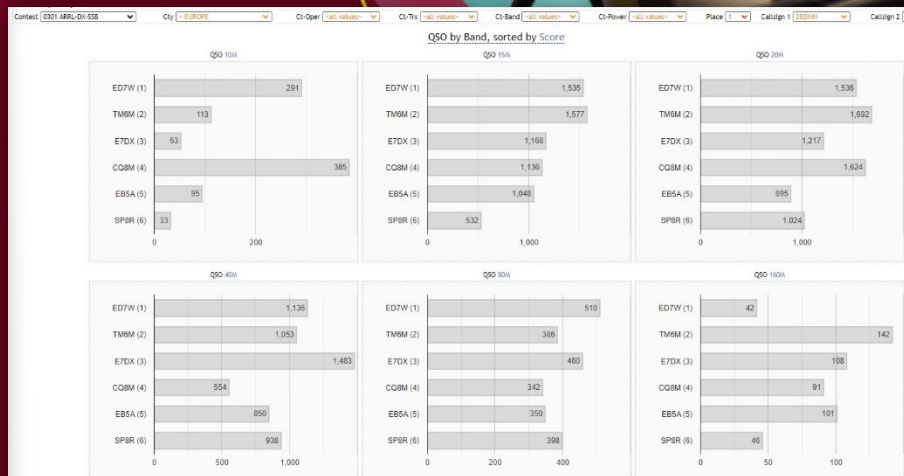
Online Contest Server

<https://cqcontest.net>

- Von Dmitry R4WW
- Ebenfalls viele Wettbewerbe
- Viele Filtermöglichkeiten
- Echtzeit-Dashboards
- Auswertung nach Kontinent, Land, Klasse, Rufzeichen, Leistung, ...
- Support von N1MM+, WinTest, TRLog (Linux), Skookum Logger (Mac), UCXLog, WriteLog, ...
- Sehr motivierend
- Ausgezeichnet für Vergleiche
- Tool für WinTest
- Video- und Audio Streaming

Opnr	Op	ONE	ALL	HIGH	SSB	Mode	Rank	Call	Score	ELOBPE										Zone	Pfx		
											Total	140	80	QSO	40	20	15	10	Total	Stat	MULT		
MULTI-OP	ONE	ALL	HIGH	SSB		1	1	TMMB	4299453	4963	142	356	1053	1892	1577	113	289	289					
						2	2	COBM	3517908	4132	91	342	554	1624	1136	385	284	284					
						3	3	SPBR	2084940	2971	46	398	938	1024	532	33	234	234					
						4	4	OH5Z	2076624	3038	18	322	943	942	797	16	228	228					
						5	5	HAI0X	719304	1394	34	169	347	599	245	172	172						
						6	6	HBKCC	408945	995	142	41	437	375	137	137							
						7	7	FBKCF	220500	588	22	68	314	181	3	125	125						
						8	8	HBD4	171414	642			6	365	271	89	89						
						9	9	SCJA	811683	304			34	81	109	89	89						
MULTI-OP	ONE	ALL	LOW	SSB		1	1	321K	86508	324	16	32	164	110	89	89							
						2	2	519H	3225	43			23	19	1	25	25						
MULTI-OP	ONE	15M	LOW	SSB		1	1	FBAOF	77403	86					86	30	30						
MULTI-OP	TWO	ALL	HIGH	SSB		1	1	ED7W	4680904	5050	42	910	1136	1536	1535	291	291						
						2	2	949Z	1988012	2582	49	461	788	1033	647	4	222	222					
						3	3	HBWNE	1659953	2874	2	264	819	912	660	17	207	207					
MULTI-OP	UNLIMITED	ALL	HIGH	SSB		1	1	100A	680295	1463	4	127	54	848	429	1	155	155					
SINGLE-OP	ONE	ALL	HIGH	SSB		1	1	ETDX	3525996	4489	108	460	1483	1217	1168	53	262	262					
						2	2	EDSA	2641320	3319	101	350	850	895	1048	95	264	264					
						3	3	PLAGH	1263015	1905	6	433	664	234	460	108	221	221					
						4	4	EAS4Q	789521	1423	1	142	339	559	7	179	179						

Opnr	Op	ONE	ALL	SSB	H	Rank	Call	Score	Total	160	80	40	30	15	10	Total	Stat	MULT	Zone	Pfx	Date/Time	Client	Elapsed	Club		
MULTI-OP	ONE	ALL	SSB	H	1	1	TMMB	4299453	4963	142	356	1053	1892	1577	113	289	289				2022-07-02 01:11:38	W	18:44			
				H	2	2	COBM	3517908	4132	91	342	554	1624	1136	385	284	284				2022-07-02 00:41:30	H	18:34			
				H	3	3	SPBR	2084940	2971	46	398	938	1024	532	33	234	234				2022-09-23 23:56:35	H	19:19			
				H	4	4	OH5Z	2076624	3038	18	322	943	942	797	16	228	228				2022-07-02 00:00:21	D	19:16			
				H	5	5	HAI0X	719304	1394	34	169	347	599	245	172	172				2022-05-07 00:37:59	H	18:37				
				H	6	6	HBKCC	408945	995	142	41	437	375	295	426	123	131	125				2022-06-11 04:17:19	W	21:28	FUNKMANIFURE ET GALLER	
				H	7	7	FBKCF	220500	588	22	68	314	181	3	125	125				2022-07-02 08:29:12	W	10:46				
				H	8	8	HBD4	171414	642			6	365	271	126		18	1095	813	89	89		2022-06-17 04:37:17	H	25:27	BANIAN CONTEST CLUB
				H	9	9	321K	86508	324	16	32	166	110	912	48	16	496	330	89	89		2022-06-19 23:49:42	H	19:34		
				H	10	10	SCJA	811683	304	34	81	189	912	102	243	567	89	89				2022-05-06 22:46:02	D	20:35		
				L	11	11	519H	3225	43			23	19	1	129		89	57	3	25	25		2022-06-11 01:04:04	H	31:44	HACHEMPTER BRANOV
MULTI-OP	ONE	15M	SSB	L	1	1	FBAOF	77403	86			86	258									2022-07-02 16:15:46	D	3:00		





Nicht vergessen!

- Original-Datei aus Contestprogramm sichern (am besten in der Cloud) + USB-Stick
- Score auf Online-Scoreboards berichten
- Finale Cabrillo-Datei an den Veranstalter schicken
- In ADIF konvertieren und in LoTW einspielen (+ eQSL)

Tipps: N1MM o.ä.

<https://n1mmwp.hamdocs.com/>

- Optimierung der Funktionstasten
 - n1mmwp.hamdocs.com/setup/keyboard-shortcuts/
 - z. B. Änderung durch Rechtsklick im Eingabefenster
- Variable Macros (z. B. Call jeden 3. Durchgang)
 - n1mmwp.hamdocs.com/setup/keyboard-shortcuts/
 - `{VARYMSG1&TU *&TU * {MYCALL}&3&}`
- Verwenden des Enter Sends Message ESM Modus
 - n1mmwp.hamdocs.com/setup/function-keys/#esm-enter-sends-message
 - Durch Drücken der <ENTER> Taste wird immer die richtige Msg geschickt
 - Einschalten und üben (CTRL-M)



Tipps: N1MM o.ä.

<https://n1mmwp.hamdocs.com/>

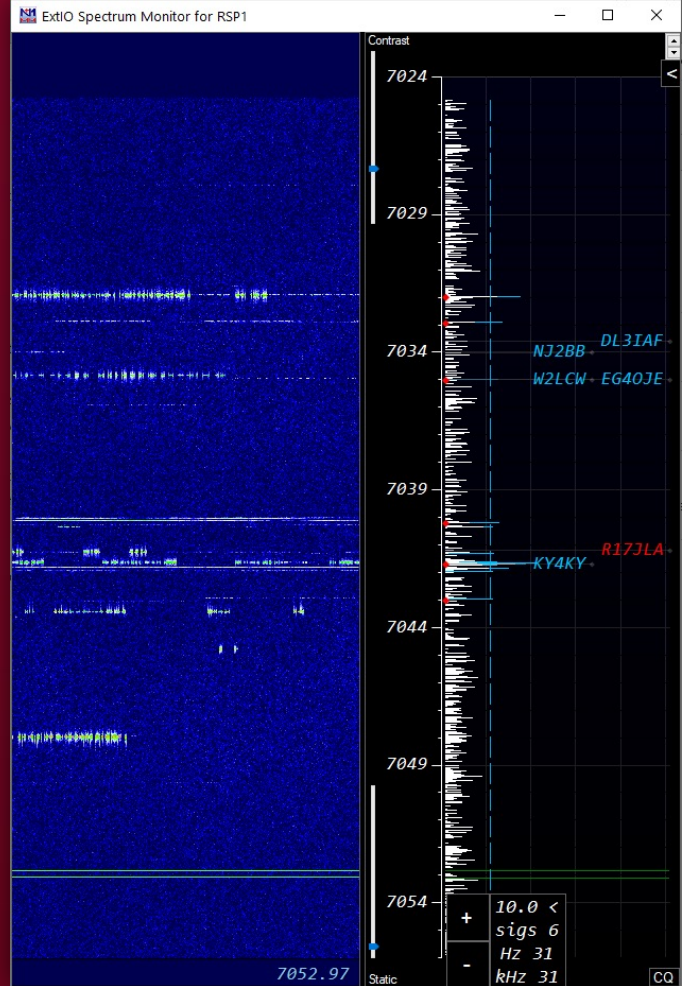
- Ablauf wie folgt:
 - F1 oder <ENTER> im Running-Mode
 - S&P: Rufzeichen eingeben (oder Bandmap-Click) und <ENTER>
 - Sehr hilfreich: Tastatur-Abkürzungen
 - **CTRL+Down Arrow** – nächster Spot höher in der Frequenz
 - **CTRL+Up Arrow** – nächster Spot tiefer in der Frequenz
 - **CTRL+ALT+Down Arrow** - nächster Multiplikator höher in der Frequenz
 - **CTRL+ALT+Up Arrow** - nächster Multiplikator tiefer in der Frequenz
- Multi/Q-Fenster – aktueller Spot oben
 - n1mmwp.hamdocs.com/manual-windows/available-mults-and-qs-window/
 - Mit ALT-A den obersten Spot holen (bei Länder-Contest nach Land sortieren)



Tipps: N1MM o.ä.

<https://n1mmwp.hamdocs.com/>

- Yank-Feature (SuperCheck Partial DB)
 - Yank mit ALT-Y aktivieren
 - Wenn Rufzeichen unvollständig aufgenommen z. B. O#6#BG eingeben und dann ALT-Y drücken
 - Weiteres Drücken von ALT-Y -> weitere Vorschläge
- Panadapter/Spectrum Display verwenden!
 - n1mmwp.hamdocs.com/manual-windows/spectrum-display-window
 - Noch besser wäre ein externer SDR (so TRX nicht modern) z.B. SDRPlay oder AirSpy (alle mit ExtIO* .dll Support)
 - Freie Frequenzen einfach(er) zu finden







73

bye



Claus
OE6CLD