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CB-Radio 11m DX How-to for Beginners

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To learn more about how to get 'On the Air' on the 11-Meter band read The CB-Radio DX HOW-TO Here you find some nice hints about working DX on the CB-Radio band (11-Meter band)

This is an official version of the 'CB-Radio DX HOW-TO' it is to be distributed free of charge by members and supporting 'followers' of the CB-Radio community, It is 'aimed' to give some nice information on the subject to new operators and 'beginners' in general.

Content

Getting started

From the start in mid 70ths CB-DX has developed into an wide known hobby Mostly the operators just make contact to new or old DX-Friend, hawing a nice conversation exchanging information about our experiences of Radio-Nature or life in general also makes the day, every time. 11-Meter radio is really a nice hobby!

What´s it about

The CB-Band(Citizens Band) also called 'Free band' span the frequency spectrum from 26MHz and strait up to 28MHz. On these frequencies Radio operators from around the world make contact and friendship.

These frequencies is on the top of the shortwave band (goes up to 30MHz) This makes it very interesting due to a number of natural phenomena known as 'skip-conditions' or just 'skip' - Reflecting Layers in the stratosphere, Aurora a.s.o. - operators on 11-Meter band uses these phenomena to make long-distance radio contacts,-usually not possible in normal conditions.

Skip conditions was first discovered in the late 50th. From the early 70ths and later, CB-DX has developed into an wide known hobby, the number of stations on the band is huge! - Almost any country or territory on the globe can be heard on the band.

The 11-Meter "Unofficial" Band-Plan

About usage of the many different frequencies between 26MHz and 28MHz and some interesting frequencies Refer to The '11-Meter Unofficial Band-Plan'

26.510 MHz to 27.865 MHz	Citizen's Band - CB radio - Germany, Czech Republic and other European countries Citizen's Band - CB radio - Russia - "EU" Channel Raster or "fives"- 120 channels	

Your First CB-Radio Station

A complete station for working on 11-Meter band in not to complicated.- You need first a CB-Radio of some kind and an antenna,- that’s al. Then of cause it could get very advanced also,- if you wishes to.

First,- To get started you need a CB-Radio of some type,- to get you started right there is some things you might think about.

Commonly there is 'tree' major types of different CB-Radio's

Type 1: Uses channels to decide operating frequency. Numbers of channels is commonly minimum 40 (1 band) maximum 240. In radios with more then 40 channels they are divided into 'bands' consisting of 40-80 channels.
These CB-Radio´s does not cover al frequency’s continuously, they 'jump' in steps of 10Khz or even sometime 20Khz In most cases these type of radio does not have the possibility to work on '0' frequencies such as 27.510Mhz These CB-Radio´s often do not have any frequency display Only a simple display for channel number. These radios is often older / used / second hand. Modulation types may be AM/FM and i some cases also SSB

Example type 3 radios: HAM Multimode I,II,III Major

Type 2: May use channels divided into band as type 1 radios but have also the advantage to be able to 'tune' the covered frequency range continuously. Most of these type 2 radios have a frequency display. Modulation types is mostly AM/FM/SSB/CW

Example type 3 radios: Galaxy Saturn

President George, Lincoln
Uniden 2830
Somercamp FT-2000DX

Type 3: Does not use channels. Tunes the covered frequency range continuously. Handle any type of modulation AM/FM/SSB/CW

Example type 3 radios: Kenwood / Yaesu / Icom HF Radios o.e.

Output Power

Standard output power for type 1 and 2 radios is 5-20W AM and 10-50W SSB
The output for type 3 radios is often as high as 50W AM and 100W SSB

What to buy or use

This is a simple question! Buy the radio you can afford! Off cause it is better to use an more advanced radio,- but remember that a good type 1 radio in good hands and with some good conditions could outperform the most expensive type 3 radio any time!.

Antenna

Second, - A good antenna should cower the decided operating frequency with an SWR (Standing Wave Ratio) less then 1:1,3 - This is not too hard to get,- but you might have to decide if you're about to work around 26.285Mhz or 27.555Mhz call frequency's,- working both with the same antenna without an antenna tuner (matching device) is not to think about since the frequency coverage of an normal CB-Antenna is about 200Khz (or 40 channels) There is however antennas that covers a wider range.

Omni directional vs. directional antennas.

The Omni directional antenna is almost always a vertical polarized antenna. It is preferable to use vertical polarized antennas when working ground-wave,- however a good Omni directional / vertical polarized antenna is a good start also for DX-Usage.

When working DX the directional antenna is the best choice, due to many reasons:

- You boost both incoming and outgoing signals.
- You make less QRM for other stations on same or close frequency
- Also able to 'shield' QRM from back or side of antenna to boost reception.
- There is also other reasons...

Horizontal vs. Vertical antenna

Why is a horizontal polarized antenna better for DX-Contacts? You could ask,- The answer is: When using a Vertical antenna the transmitted RF-Signal tend to 'stick' to the ground, thereby called 'Ground-Wave' this is a good thing if you

want to make big-signals locally,- effects only your contacts in the distance of about 70-200Km Maximum.

When working DX-Stations you don't need an strong 'Ground-Wave' you desire is that maximum RF-Signal should leave the Ground and bounce into the stratosphere and 'skip' down in an DX-Country. This effect is much more eminent on a horizontal polarized antenna.

Lightning protection

Make sure to ground / earth your antenna against lightning.

Modes of modulation

The modulation types used on the 11-Meter band is mostly SSB(Single Side Band) and FM (Frequency modulation) some stations also uses CW (Continues Wave/Morse code) The AM (Amplitude Modulation)
is not used.

Modulation types.

AM	none	Don´t use it! Makes QRM!
FM	none	For local QSO! Makes QRM if used for DX
SSB	LSB / USB	Best for DX QSO use!

Data-Modes.

Some data modes is also used on the 11-meter band, they are using SSB- Modulation as carrier. (USB/LSB) Packet stations is often heard on 27.235 (ch.24 Scandinavian stations mostly) other Modes/Frequency's refer to The 11-Meter "Unofficial" Band-Plan.

Your Call-Sign

There is really no "standard" method to get a call sign, first you simply make one up for your self! It´s as easy as that! But Here is some general "hints" to think about when you create a call sign for your first contact.

- The first part (numbers) in a CB-call sign refer to the country prefix list, there is one prefix list that is close to standard on the 11-Meter band, this is the AT-List (From Alfa Tango DX Group - Asti/Italy) Refer to: DXCC Country Prefix list @ URL: https://www.qrz11.com/viewtopic.php?t=805

- The second part (Letters) in a CB-call sign is commonly the "Group" letters, therefore if your about to create a call sign of your own, try to choose letters that is not used by any DX-Group .

- The last part (numbers) in a CB-call sign is commonly the membership number in the group according to the second part of the call sign.

Joining a CB-Radio group

Also a part of CB-Radio that is really hard to explain, but not very complicated in real life! To join a DX-Group commonly isn´t that hard, in general most groups requests an application from you, some form of effort is often asked from you, you might have to work X-numbers of stations belonging to the group you want to join, or something like that. Some groups don't accept applications, they only invite CB-Operators strictly by recommendations from other group members.

Information about DX-Groups

To get information about a DX-Group simply ask the station you talk to about information,- most operators strongly 'promote' their respective DX-Group and gladly sends you any needed information an most certain an application-form of their DX-Group,- many DX-Groups now also have information available on the internet.

The Q-Code.

The International Q-Code is also used on the CB-Radio band (11-Meters). Using the Q-Code simplify making contact if conditions is pore, it also shortens the time you have to be "on the air", Use of Q-Code on the CB-Radio band is close to mandatory

Some Common Q-Codes used on the CB-Radio band.

QRM	Interference from other Signals.
QRN	Static or atmosphere Interference - noise.
QRT	Shut down the station / Stopping transmission.
QRZ	Who is calling me? What is your Call-Sign?
QSB	Signals is fading. Signal strength is going up and down.
QSK	Brake in on an ongoing QSO
QSL	Confirmation of complete contact by radio *or* by card
QSO	Contact by radio
QTH	Position from where the transmission is made
QRG	Frequency
QRL	Busy
QSY	Change frequency

International spelling alphabet.

The use of a common spelling alphabet makes life on the band much more

simple, use of the International spelling alphabet is common on the CB-Band, However local variations is also used. The suggestion is to use the International spelling alphabet.

(It´s the same as the alphabet used for International Aviation communication)

International spelling alphabet.

A - Alfa	B - Bravo	C - Charlie	D -Delta
E - Echo	F - Foxtrot	G - Golf	H - Hotel
I - India	J - Juliet	K - Kilo	L - Lima
M - Mike	N - November	O - Oscar	P - Papa
Q - Quebec	R - Romeo	S - Sierra	T - Tango
U - Uniform	V - Victor	W - Whiskey	X - X-Ray
Y - Yankee	Z – Zulu		

Signal Report

Always give signal report to the opposite station, the signal report is split into two parts.

Part one: Signal Readability - A scale from 1(Zero) to 5(Five)

Radio 5 - Excellent signal 100% Readable
Radio 4 - Good signal 80-100% Readable
Radio 3 - Some difficulty to read about 60-80% Readable
Radio 2 - Big problems to read, Less then 50% readable
Radio 1 -Very hard to read about 20% Readable

Part two: Signal strength - A scale from 1(Zero) to 9(Nine) It is the same as "S" units on most standard signal-meters on the CB-Radio

Signal 9+ - Very Strong Signal (Stable/No QSB)
Signal 9 - Very Strong Signal
Signal 8 - Still Strong Signal
Signal 7 - Strong Signal
Signal 6 - Medium Strong Signal
Signal 5 - Medium Strong Signal
Signal 4 - Not so Strong Signal
Signal 3 - Quite weak Signal
Signal 2 - Very weak Signal
Signal 1 - Almost No Signal

Sample signal report.

You are receiving a signal from a CB-Station, your signal-meter is reading seven (7) "S"-Units and the modulation (talk) is 100% readable, but the signal is going down to Five (5) "S"-Units from time to time, your signal report could be:

Sample 1: "Your Signal report is 57 / 55 with some QSB"

Your first CB-Radio DX - QSO

Time to make the first contact, tune your CB-Radio to an International Call-frequency (27.555Mhz or 26.285Mhz is a good place to start) Listen carefully, there is no need for you to make your own CQ-Calls if somebody that you wishes to contact is already calling CQ on the frequency. Simply answer that Call instead of making your own Call (And QRM)

Listen!

The key to successful Dx is to listen, many interesting DX stations often don´t answer on CQ-Calls, and they might not make any CQ-Calls them self. You simply need to listen and wait, don´t disturb nice conversations, listen and learn instead! If you disturb (Makes QRM) for a nice DX-Station the chance to work this station in MINIMUM.

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* **Remember! You don´t want to be known as a QRM-Station!** *

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Answer on a CQ-Call

(General Calls or a call for your prefix/region only!)
Only answer Calls for your country/region (Prefix) or General Calls, Answering on Calls for other countries/regions (prefix) than your own is not good, it only makes QRM and the chance for you to make QSO with the calling station is only getting smaller!.

To answer a CQ-Call (General-Call or Call for your prefix) - Simply call the opposite station giving his/hers call-sign first followed by Yours.

Also! Try to give a QSY frequency as soon as possible, don´t make the QSO on a Call-Frequency. Important! Remember to check for a free QSY frequency first. The QSY-Frequency have to be within MAXIMUM 100Khz +/- from the start frequency due to problems with SWR.

The station with the call sign "3KP000" is making a general call, you wishes to make a QSO with this station, here are two example answering the call, call.

Sample 1: 3KP000, this is [Your Call sign] QSY frequency[New frequency] QSL

Sample 2: 3KP000, -[Your Call sign] Standing by on [New freq.] for possible OSQ

Change to the new frequency and make a new call for the opposite station,
or wait for the opposite station to call on you.

OR! - And even better method, make a call and give QSY frequency [New frequency] at once! (Recommended)

Making a CQ-Call

Go to an call-frequency and listen first,- if someone else is calling and you wishes to talk to that station simply answer and make a QSY(Change frequency)

If the frequency is clear (No stations calling) You can make a call for any station or an region or country.

Sample 1: CQ CQ CQ DX this is [Your Call sign], [Your Call sign] QSY to [New frequency]

Sample 2: CQ CQ CQ for [Region or Division] this is [Your Call sign], [Your Call sign] QSY to [New frequency]

Hint! If low conditions you might repeat your [Your Call sign] and [New frequency] a couple of times more,- but try not to make your call to long,- 20-40 seconds at the most!!

If you are calling on a call-frequency,- Try to give a QSY frequency as soon as possible, don´t make the QSO on a Call-Frequency. Important! Remember to check for a free QSY frequency first.

Making a QSK (Break)

Making a QSK on an ongoing QSO should be done with great restriction, for example if the conditions is unusual,- if you simply wish to make a QSO with one of the stations in QSO, you should wait until the two stations ended their QSO!!

NOTE! Only make QSK if the matter concerns both stations in QSO

Used with restriction you could make an QSK only to get acknowledge and inform the two QSO stations that you are interested in QSO and that you are standing by for QSO after they finished their ongoing QSO.

New DXCC

:-) = //Great SMILE!//

This is my reaction when a new DXCC-Country is worked on the band. However, hawing a nice QSO with a new or old DX-Friend, exchanging information about our experiences of DX-Nature or life in general also makes the day, every time. 11-Meter radio is really a nice hobby!

Your Log-Book

Keeping a log of your DX-Radio contacts is a great idea, it simplifies QSL-Exchange and you don’t have to remember everything in your head! Here is a suggestion about what to write in your Log-book.

What to write in your Log-Book.

In your log, you could write about contacts to make it possible to remember who you have contacted,- to keep track of QSL-exchange and maybe to help you count your 'dxcc-score' a.s.o.

Call Name/handle (*postal-address for QSL-exchange)

QSO Time/date QSO frequency Signal report

QRM/QRN/QSB Mode of modulation

Prg.	Date	Time Loc/UTC	Call sign	Frequency (MHz)	Mode	R/S/T	Comments: Name, Country...etc.	Prg. rx
1	/ /	:		.		/		
2	/ /	:		.		/		
3	/ /	:		.		/		

Also a sample log-book page in Adobe .pdf format ready for you to use!
@ URL: https://qrz11.com/viewtopic.php?p=68#p68

*The postal code is only needed if you're about to send a QSL to this station.

QSL Exchange

The final courtesy of QSO/DX is a QSL. It is common to exchange QSL-Cards, If you promise to send a QSL-Card, then do 'it! - If you don´t want to exchange QSL simply notify the opposite station that you don´t exchange cards!.

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*** Remember! You don´t want to be on any "BLACK-LIST" as a bad QSL! ***
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Your QSL-Card.

Some hints about what to put on your QSL-Card. It is always nice to get a personal QSL-Card,- look at the samples, you might get some ideas about how to design your own card, many CB-Radio clubs also sell there "Group"-QSL cards.

Of cause your QSL-Card is a 'letter of friendship' and therefore should not make any kind of offence towards anyone. It should not contain any material, text or images with subject such as: political, religious, sexual a.s.o. that can be miss interpreted or is aimed to affect the receiver in negative meaning, intentional or unintentional.

This is the minimum of information to put on your QSL-Card.

QSO information.

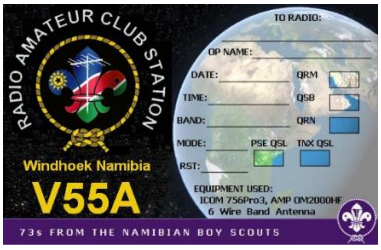
Your Call-Sign	Your first name	our QTH
QSO Time / date	QSO frequency	Signal report
QRM/QRN/QSB	Mode of modulation	

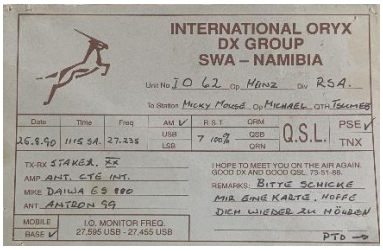
2023-09-12 17:18	51DX202	27500,00	USB	59	59	wayne

Working-Conditions.

Transceiver	RF Output(W)	Antenna
Accessories		

Sample Radio QSL Cards from around the world (Al continents)





Postal adresses

Remember that CB-DXing is NOT allowed in most countries! Therefore always handle Postal-addresses with care! - If you got the address 100% the first time, don't repeat it back over the CB,- just state that you got the address 100% - If possible, obtain the QSL-Address via a 'Call-book' or internet.

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*** NEVER WRITE ANY CALL-SIGNS ON QSL-ENVELOPE!!! ***
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Activations

This is a special event on the band,- usually a number of fellow radio operators forming a 'team' to travels in to another country or territories (DXCC) or an island (IOTA) to activate it.

Normally with special call-sign and also confirming the contact with special QSL-Card. Most interesting Activations is made from rare DXCC-Country's. (These is not usual, and very hard to work.)

DXCC Activations.

The activation should be made from a country or territories void in DXCC-Country list, At the moment 340 country's or territories qualify for DXCC.

IOTA Activations.

'Islands On the Air'
The activation should be made from an island that is void by IOTA-Rules.

LOTA Activation

'Lighthouses On the Air'
The activation is made from a Lighthouse,- this is a new form of activation.

Glossary

11-Meter Corresponding wave length to the 27MHz frequency Wavelength is calculated [Speed of light]/[Frequency] (300/27=11.1)

Popular used 'greeting' term

Used when finish of contact - Often used in combination with the other 'good numbers'

51 = Best regards
73 = Hope to hear you again
88 = Love and kisses

These good numbers' originates from early Morse operators Activation
Term used to identify Radio-Station normally not working within present location, often other DXCC-Country or IOTA-Island Normally activations is done within DXCC-country's that normally isn´t heard on the band, however these days activations is also done from 'Regions' and/or 'Counties' within a country,- also from 'club' stations special events, celebrations a.s.o.

CB U.S.A 'Citizens Band' within the frequency range of 26MHz to 28MHz CB-Radio
An combined receiver and transmitter contained within the same cover made for usage within the frequency range of 26MHz to 28MHz Coaxial cable
A type of cable used for RF-Signals, it has two conductors. The center conductor is for the RF-Signal,- An outer conductor is functioning as 'shield' to contain the RF-Signal within the Coaxial-cable.

Conditions

Skip-conditions	Status of any natural phenomena that is used in order to make an long distance radio contact. (Reflecting Layers in the stratosphere, Aurora a.s.o.)
Working-Conditions	Equipment,- radio antenna a.s.o. used for the contact.
DX	Used to categorize Long Distance contact. Outside your country.
DXCC	The 'DX-Country Club',- now used as term for determine and separations of country's or territories making

	separate 'radio-country' or 'prefix' to be counted as a 'DXCC' At the moment 352 country's or territories qualify for DXCC.
Free Band	Often used term to identify the frequency range of 26MHz to 28MHz
IOTA	Islands On The Air
LOTA	Lighthouses On the Air
Modulation	States the method used to encode in this case an Audio signal (voice) on to an RF-Signal carrier.
Modulation-Types	FM - Frequency Modulation AM - Amplitude Modulation LSB - Lower Side Band (Single Side Band Modulation) USB - Upper Side Band (Single Side Band Modulation) CW - Continuous Wave (None modulated carrier)
Polarization	States the angle of radiated RF-Signal emitted from any antenna,- In these case normally Vertical or Horizontal.
Propagation	Status of any natural phenomena that is used in order to make an long distance radio contact. Se also 'Skip-Conditions'(Reflecting Layers in the stratosphere, Aurora a.s.o.)
SWR	'Standing Wave Ratio' Used to determine miss matching in the transmission line eq= Radio - Feedline - Antenna. Measures miss matching i terms of ratio. SWR 1:1 = 100% match.
Transceiver	An combined receiver and transmitter contained within the same cover, now equals to normal amateur radio equipment for usage on HF-Band 0.5-30MHz
QSL-Card	A receipt of an contact (QSO) sent by normal mail to verify the contact.

DISCLAIMER

In some countries it is illegal (Not allowed) to use CB-Radio for DX communication, so you need to check with local laws and regulations before starting with CB-Radio DX.

Local (Country bound) Laws and regulations often cowers the usage of CB-Radio in the following related/linked considerations.

- Usage of specific frequencies in the range of 26-28Mhz (National HF-Band plan)
- Usage of official CB-Radio channels (Citizen Band, 23ch, 40ch etc.)

- Usage of different types of modulation, often only FM (other types of modulations is often not allowed)
- Usage of directional antennas.
- Restrictions considering RF-output effect. (Often no more then 4Watt)
- Restrictions considering usage of CB-Equipment for communication only between stations in the same country, and/or between one stationary and one mobile or maritime-mobile station (not for use between two stationary/base stations)

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