

WSPR/WSPRlite FAQ

How can I find out more about WSPR and its protocol?

The following references are worth reading:

WSPR by Joe Taylor K1JT

<https://physics.princeton.edu/pulsar/k1jt/wspr.html>

WSPR General Overview

<http://www.g4ilo.com/wspr.html>

WSPR S/N

http://www.g4jnt.com/WSPR_SNR_test.pdf

WSPR Coding

http://www.g4jnt.com/wspr_coding_process.pdf

I am transmitting on one band but I see occasional spots for another band. How does that happen?

WSPR receiving station manually set the reporting software to that band that they are receiving on. If they make a mistake, these spots received on one band are reported on another. Receiving stations usually notice this quite soon so only a few wrong spots end up on the database. It is those incorrectly reported spots that you are seeing. If one station reports consistently wrong, you might consider looking them up on QRZ and sending them an email.

One station seems to report my signal multiple times in the same time slot with different reports. Is something wrong?

Some stations conduct experiments with multiple receivers and antennas all using the same callsign (SM0EPX is a common example). Thus they may report you two or more times in the same time-slot. This is clearly confusing but does not indicate any problem.

The map at DXplorer and or WSPRnet shows my QTH incorrectly. Can this be fixed?

The WSPR protocol only allows for the first four characters of a Maidenhead locator to be sent (e.g. FN27). This localises your QTH to a large grid square. The size of these squares (actually normally rectangles) varies depending where you are on the surface of the earth and can be as big as 150 x 150km. WSPRnet and DXplorer use the centre of the square as your location.



If you submit spots to WSPRnet.org you can add a more accurate locator to their database. I believe this can be done manually to update your location. For guidance on how to do this I recommend asking in the forum at WSPRnet.org

The WSPR specification says transmissions should start 1 seconds into the hour. Why do you recommend starting 2 seconds in?

We characterised the WSPR decoding software and found that it was significantly more tolerant to late starting than to early starting. The WSPRlite uses a high quality TCXO as its time and frequency standard. Measuring many WSPRlite devices we found that the largest likely error after 30 days was about 1.6 seconds. By starting 2 seconds after the hour, even the worst-case units will be well within the decode window after 30 days.

I want to use a compound callsign e.g. PJ9/W1AW but I cannot enter that as my WSPR ident. Why is that?

The standard WSPR protocol uses a rather elegant and efficient way of encoding data including callsigns. This limits the callsign to a maximum of six alpha-numerics (only numbers or letters). It is this encoding that WSPRlite supports.

There is an enhanced version of the WSPR encoding that supports longer callsigns but this carries with it a large penalty both for the person transmitting and for the wider WSPR community. In essence two messages must be sent and received correctly to get the full data. This significantly reduces the chances of successful decodes and also means more bandwidth is taken up for the user. The enhanced version also only supports a maximum of 32k users. For these reasons WSPRlite does not support the enhanced version of the WSPR protocol and indeed it is generally not recommended.

If you need to use a compound callsign, perhaps while on holiday, we suggest using the CW Callsign facility to send the compound callsign and leaving your WSPR ident as your home callsign. The identification needs of most regulatory authorities will be satisfied with a callsign sent in CW. It is the responsibility of the user to check the regulatory requirements in their country of operation.

I want to have two WSPRlites running for antenna testing but I only have one callsign. How can I do that?

One possibility is to have two WSPR idents (aliases) such as G13CWI and G23CWI and use the CW ident for your formal ident "G3CWI". We suggest that your aliases should be easily associated with your callsign. Note that the WSPR protocol only allows numbers in character position 1, 2 and 3. It is the responsibility of the user to check the regulatory requirements in their country of operation.

How does the power of a WSPR transmission compare to SSB and CW?

KP4MD has produced a table based on 2500Hz bandwidth with may be useful. We have adjusted it for equivalence at 200mW (WSPRlite power).

<http://www.qsl.net/kp4md/wsprmodes.htm>

Relative Sensitivity of Communication Modes		
Mode	Signal to Noise Ratio Threshold	Power Equivalence
WSPR	-27 dB	200 mW
JT65	-24 dB	400 mW
Olivia	-17 dB	2 W
PSK31	-7 dB	20 W
CW	-1 dB	80 W
RTTY	+5 dB	320 W
SSB	+10 dB	1000 W

I am using the data download facility at DXplorer. The time/date format looks odd. How do I use it?

The time/date format used is a UNIX time-stamp. There are lots of references on the internet showing how to use this format including:

http://spreadsheetpage.com/index.php/tip/converting_unix_timestamps

Google "UNIX timestamp convert excel" for more options.

I have been using my WSPRlite on 160m, 80m and 40m without an additional low-pass filter. It works fine so why do I need a filter?

The optional low-pass filter will not make your WSPRlite work any better. What it will do is stop unwanted harmonic radiation which can cause interference to other radio users and may be illegal in some places. If you value your licence we recommend using an external low-pass filter on all bands except 20m and 30m. Note that a low-pass filter is also necessary for use on other bands below 10MHz such as 60m (5 MHz) and 630m (500 kHz).

Note that the type of low-pass filter required for harmonic filtering is band-specific. A general purpose HF low pass filter will have its cut-off above 30MHz and is not suitable.