WSPR/WSPRlite FAQ

Where can I share ideas and get more help?
There is a an active WSPRlite Facebook Group with over 1000 users who can help. Click here.

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

Once you have explored the possibilities of using your WSPRlite, we recommend trying to set up a WSPR receiving station to contribute to the wider WSPR program.

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 Type 1 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.

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If you submit a few spots to WSPRnet.org by making transmissions using a six character locator, your more accurate locator will be added to their database. Once the accurate locator is in the database, type 1 messages 9four character locator) will automatically get the more accurate six character locator from the database.

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 Classic 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. WSPRlite Flexis undergo further alignment and thus they will run for up to 45 days.

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. Most regulatory authorities allow the identification of transmissions using a CW ident (as opposed to a WSPR callsign alias). It is the responsibility of the user to check the regulatory requirements for the identification of transmissions in their country of operation.

Another way you could do this is using a compound callsign (e.g. G3CWI/1 and G3CWI/2). However the use of compound callsigns will negatively impact the overall results that you achieve and so is not recommended.

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

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Mode	Signal to Noise Ratio Threshold		Power Equivalence	
	Relative Sensitivity of Communication Modes			
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

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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 (WSPRlite Classic) . Note that a low-pass filter is also necessary for use on other bands below 10 MHz such as 60m (5 MHz) and 630m (500 kHz). WSPRlite Flexis need external low-pass filters on all bands.

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 30 MHz and is not suitable.

I am comparing antenna using two WSPRlites. Are there any tips for doing this?

To get the best results both WSPRlites should run using the same firmware and configuration settings. Ensure that they are more than 10 Hz apart in frequency. Ideally both should send Type 1 messages. If you start both WSPRlites at the same time they will be synchronised which with give you more simultaneous data - that is the best for comparisons.

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