Short Summary of SuperSweep thread. Key points.

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(***Verified version**, corrected by* **Stu Tooley** here).

Here is a summary of the key points from the forum thread discussion on creating frequency sweeps:

1 The goal was to create optimized frequency sweeps that cover a wide range of frequencies known to be effective against pathogens, while also addressing some limitations of previous sweep methods.

2 Previous sweeps that covered a very wide frequency range (e.g. 1hz to 1.6MHz) were found to miss the lower frequencies. This is because the sweep speed and frequency steps are calculated based on the mid-point frequency. At lower frequencies, the 0.025% frequency tolerance window is smaller in absolute Hz terms, so gets skipped over too quickly.

3 To address this, the frequency range was broken into part octaves, with separate sweeps created for each part octave band. This allowed better control over hitting the lower frequencies with the proper dwell time.

4 The sweeps utilize a "dual" output method, with Out1 and Out2 running separate frequency ranges in parallel. This doubles the speed whilst still hitting all pathogens. The frequencies on Out2 are a multiple of 1.22x Out1 frequencies.

5 A key innovation was using the Wave Cycle Multiplier (WCM) to control sweep intensity. Higher WCM divides the output power across more sequential frequencies. Lower WCM concentrates power on fewer frequencies. This allowed creating Gentle, Medium and Strong sweep versions by adjusting WCM.

6 The sweep presets alternate between Out1 and Out2 frequency ranges to ensure full coverage. Adjacent sweep ranges have a 10% overlap for redundancy.

7 Sweep versions were iteratively refined based on user feedback and oscilloscope measurements to optimize frequency coverage. Multiple GenX and XM sweep presets

were created.

8 Later experiments looked at extending sweeps to 40MHz and higher, based on indications that higher frequencies may affect pathogens in different life cycle stages. More testing is needed in this area.

9 Overall, the goal was to create effective broad-spectrum sweeps that are gentle, comprehensive, and require minimal user intervention, by leveraging Spooky2's capabilities. User feedback indicates significant health improvements in many cases.

In summary, they used a systematic approach to creating optimized sweeps that overcome limitations of previous sweeps, with excellent results reported by many users.

Why 1.22x for Out2 frequencies?

· The goal was to create a frequency offset between Out1 and Out2 to avoid synchronization and waveform summation.

· Using a simple multiplier like 1.25x or 2x would result in Out1 and Out2 hitting the same frequencies too often.

· A number like 1.22 provides a more chaotic/randomized offset while keeping the frequencies within an part-octave range.

· 1.22 was found empirically through testing to give good coverage with sufficient offset between Out1 and Out2.

· It prevents boosting/amplification effects from syncing up, while still keeping frequencies close enough for redundancy.

· In summary, 1.22x was chosen as a "Goldilocks" number - not too simple, not too complex, but just right.

· 1.22x has proven in tests to be an ideal number. At 1.22x for the primary freq steps between each group, the SPECTRUM calculates at between 11% and 13 %. Any Spectrum Sweep above 20% will not treat the lower freqs.

How Wave Cycle Multiplier (WCM) controls sweep intensity:

· WCM determines how many wave cycles are completed consecutively.

· Higher WCM = more wave cycles per frequency = less 'time over target'.

· For example, with WCM=1, each frequency gets 1 wave cycle. With WCM=6, each frequency gets 12 wave cycles.

· With higher WCM, the power output is divided across more wave cycles for that frequency.

· So higher WCM dilutes power per wave cycle, since total power is divided over more cycles.

· This makes the sweep gentler/weaker even though the total voltage setting is the same.

· Lower WCM concentrates the power into fewer wave cycles per frequency, making it more intense.

· So they use WCM to control intensity - higher WCM makes a gentler sweep, lower WCM makes a stronger sweep.

Algorithm to calculate frequencies for presets:

· Start with the overall frequency range to be covered, e.g. 48.8 Khz to 20MHz.

· Break this into part octaves, e.g. 49Khz to 77 Khz, 73 Khz to 114 Khz etc.

· For each octave band, determine the number of presets needed to cover it based on dwell time.

· There is overlap between presets to ensure full coverage.

· Repeat the process for each part octave band.

· For Out2 frequencies, multiply the Out1 frequencies by 1.22x.

So in summary, they systematically break the full range into octave bands, determine number of presets needed per band based on dwell time, divide the band into equal preset size, and offset Out2 by 1.22x.