S2 (SLO1 & 2) Frequencies for radio Communication

Radio frequencies are all about the oscillation rate of electromagnetic (EM) radio waves within the 3 kHz to 300 GHz range and the alternating currents responsible for transmitting the radio signals.

That particular frequency range is what is employed in broadcasting and communication transmissions.

While radio frequency talks about the oscillation rate of the waves, it can also be called wireless or radio communication.

Having understood the basic meaning of radio frequencies, I would like us to dig a bit into the subject.

Radio frequencies seem to have countless applications in various fields.

But, if we limit our discussion to the field of communication and information technology, its definition will then revolve around the frequency band through which wireless telecommunication signals are transmitted or broadcast.

Radio frequencies are normally outputted by oscillating current a specific number of times before radiating off an antenna into the atmosphere as EM radio waves.

Types of radio frequencies

Signal processing noise can be classified by its statistical properties (sometimes called the "color" of the noise) and by how it modifies the intended signal:

- Additive noise, gets added to the intended signal
- White noise
- Additive white Gaussian noise
- Black noise
- Gaussian noise
- Pink noise or flicker noise, with 1/f power spectrum
- Brownian noise, with 1/f2 power spectrum
- Contaminated Gaussian noise, whose PDF is a linear mixture of Gaussian PDFs
- Power-law noise
- Cauchy noise
- Multiplicative noise, multiplies or modulates the intended signal
- Quantization error, due to conversion from continuous to discrete values
- Poisson noise, typical of signals that are rates of discrete events
- Shot noise, e.g. caused by static electricity discharge

- Transient noise, a short pulse followed by decaying oscillations
- Burst noise, powerful but only during short intervals
- Phase noise, random time shifts in a signal

How do radio frequencies work?

Radio waves are known for exhibiting the longest wavelengths among all the other components in the EM spectrum.

That is why they are capable of transporting information from one point to another point. However, radio waves never transport that information just like that. So, how do they work?

The radio waves normally undergo what is known as modulation. Another way to explain modulation is alteration.

The carrier wave will be overlaid by a sound wave that compels it to change.

Radio stations normally alter their carrier waves in two ways: FM and AM, frequency modulation, and amplitude modulation.

For example, a radio station that relays AM signal would broadcast its carrier wave to ensure a steady frequency, whereas the overlay carrier wave would alter the amplitude.

How to improve radio frequency?

Like we had initially established, radio frequency or RF is just another term for radio or wireless communication. In other words, we can rephrase the above question to how to boost wireless communication.

A group of researchers at the New Jersey & Harvard University tried to boost radio frequency.

Their report stated that the use of multiple antennas could boost radio waves. This one greatly applies to communication technology.

They demonstrated that radio signal data transmission rates could be overwhelmingly multiplied by three when more than one antenna is used in its transmission.

They went further to state that if the use of multiple antennas is practiced, mobile phone operators would have the capacity to support more traffic and more users.