a glance at exactly how

It is easy to be bewildered by the terminology which wireless loudspeaker suppliers use to describe the performance of their products. I will explain the meaning of a usually used parameter: "signal-to-noise ratio" in order to help you make an informed choice when buying a brand new a pair of cordless speakers.

When you have narrowed down your search by taking a look at several basic criteria, including the amount of output power, the size of the loudspeakers plus the price, you will still have quite a few models to choose from. Now it is time to take a look at a few of the technical specs in more detail. The signal-to-noise ratio is a rather essential specification and shows how much noise or hiss the wireless speaker makes.

You can do a simple comparison of the cordless loudspeaker noise by short circuiting the transmitter input, setting the loudspeaker gain to maximum and listening to the speaker. Generally you will hear 2 components. The first is hissing. In addition, you will often hear a hum at 50 or 60 Hz. Both of these are components which are generated by the cordless loudspeaker itself. Make sure that the gain of each pair of cordless speakers is pair to the same level. Otherwise you will not be able to objectively evaluate the amount of static between different models. The general rule is: the smaller the amount of hiss which you hear the better the noise performance.

If you favor a pair of cordless loudspeakers with a small amount of hissing, you may look at the signal-to-noise ratio figure of the data sheet. Most manufacturers will show this figure. cordless loudspeakers with a high signal-to-noise ratio are going to output a low amount of noise. Noise is generated due to several reasons. One factor is that modern cordless outdoor loudspeakers all employ components including transistors as well as resistors. Those elements will produce some amount of hiss. The overall noise depends on how much noise every element produces. Nonetheless, the location of these elements is also important. Components which are part of the speaker built-in amp input stage are going to usually contribute the majority of the noise.

Noise is also created by the wireless transmission. Different styles of transmitters are available which work at different frequencies. The least expensive type of transmitters employs FM transmission and typically transmits at 900 MHz. The level of noise is also dependent upon the amount of cordless interference from other transmitters. Modern types are going to normally employ digital music broadcast at 2.4 GHz or 5.8 GHz. The signal-to-noise ratio of digital transmitters is independent from the distance of the wireless loudspeakers. It is determined by how the music signal is sampled. Also, the quality of parts inside the transmitter will affect the signal-to-noise ratio.

Most of today's wireless loudspeakers use power amplifiers which are digital, also called "class-d amplifiers". Class-D amps use a switching stage that oscillates at a frequency between 300 kHz to 1 MHz. In consequence, the output signal of cordless loudspeaker switching amps have a rather big amount of switching noise. This noise component, however, is typically impossible to hear because it is well above 20 kHz. Nonetheless, it can still contribute to loudspeaker distortion.

Signal-to-noise ratio is generally only shown within the range of 20 Hz to 20 kHz. Therefore, a lowpass filter is utilized when measuring cordless loudspeaker amps in order to remove the switching noise.

The signal-to-noise ratio is measured by feeding a 1 kHz test signal 60 dB below the full scale and measuring the noise floor of the signal generated by the built-in amplifier. The amplification of the cordless speaker is set such that the full output power of the built-in amp can be achieved. Then the noise-floor energy is measured in the frequency range between 20 Hz and 20 kHz and compared with the full scale signal energy.

An additional convention in order to express the signal-to-noise ratio makes use of more subjective terms. These terms are "dBA" or "A weighted". You will spot these terms in a lot of cordless loudspeaker spec sheets. In other words, this method attempts to state how the noise is perceived by a person. Human hearing is most perceptive to signals around 1 kHz whereas signals under 50 Hz and higher than 14 kHz are hardly noticed. Consequently an A-weighting filter will amplify the noise floor for frequencies that are easily heard and suppress the noise floor at frequencies that are hardly noticed. The majority of wireless speaker will have a larger A-weighted signal-to-noise ratio than the un-weighted ratio.