Subject: Re: Frequency response Vs. Distance.
Posted by Wayne Parham on Sat, 04 Jul 2009 17:15:13 GMT
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You're right, HF falls off faster than LF. It's a simple matter really, in that higher frequencies causes the molecules to vibrate more, so more acoustic energy is transformed into heat. One weird side effect is this same effect literally changes the speed of sound at HF by a tiny amount. This occurs more at sea level than it does at higher altitudes.

There are some other weird things that happen due to atmospheric conditions. In still air, sound is refracted upwards due to the fact that temperature at altitude is lower than it is at sea level, changing the speed of sound. Wind causes an opposite effect downstream, which causes refraction downwards. The combination of these effects can exactly counter, in which case sound will travel along the ground, seemingly in a straight line. Or it may appear to have a dead spot, where sound cannot be heard in some area between the source and another more distant area where it can again be heard. Or it may simply be refracted away. Depends on the wind speed and the temperature.