



General comparative review of BG planar ribbon thin film technology

BG's technology is based around planar magnetic or ribbon transducers. Planar magnetic transducers as well as ribbon and electrostatic can be all referred as planar transducers. Their radiating element is a thin diaphragm with very small weight to surface area ratio. Ribbon drivers (with aluminum ribbon) and planar magnetic drivers are both similar. They are electrodynamic transducers that use electromagnetic energy to drive their thin diaphragms, as opposed to electrostatic drivers that use the potential energy of electric field to drive their thin film diaphragms. Strictly speaking there is no standard widely accepted specific name for such drivers. Why ours are better, what makes them different?

In planar ribbon drivers:

Driving force directly acts on the diaphragm – purest minimalistic way of energy transfer- freedom from resonances, acoustical filtering, transmission delay and losses

- **Driving force is evenly distributed over the radiating surface** of the diaphragm – ideal condition for sound radiation, - no break-up resonances, no transmission delay, no wave cancellation

Mass of the diaphragm compares to the mass of associated air volume vibrating along with the diaphragm thus creating ideal coupling conditions for sound energy transfer, effective and lossless dampening, accurate impulse response, and providing very high sensitivity and output extension up to 40 kHz

- **Purely resistive impedance** virtually free from inductive component – ideal and easy load for an amplifier and crossover network, no crossover resonance in a stop band, no phase shifts and excessive group delay, no high frequency losses
- **Negligible inductive component** in ribbon driver impedance does not generate non-linear distortion inherent for conventional drivers that have voice coils with high inductance.

Flat radiating surface – ideal shape for sound radiation, does not change with frequency – results in even and coherent wavefront, even dispersion, no wave cancellations, no signal delays, no obstructions or cavity resonances

In conventional drivers:

- **Driving force acts indirectly on the diaphragm**, energy is transmitted through voice coil stack, glue joint, bobbin and another glue joint – generates distortion due to resonances, mechanical filtering, transmission delay and losses
- **Driving force is distributed along the circular joint** of the voice coil and the dome - break-up resonances, transmission delay, wave cancellation

- **Complex impedance with large inductive component** and clearly pronounced resonances –complex load for an amplifier and crossover network, exhibits transfer function resonance in a stop band, imposes phase shifts and excessive group delay, increases high frequency losses.
- **Large inductive component in drivers' impedance exhibits high level of non-linearity with high excursion and varying signal level**

Curved radiating surface with frequency dependant vibrating pattern– results in uneven and incoherent wavefront, uneven dispersion, wave cancellation, signal delays, obstructions or cavity resonance (in case of inverted dome)