ISVR Consulting
Consultants in Noise and Vibration

Specification for the MKIII High Frequency Omni-Directional Sound Source and MKIV Noise Source Power Unit

The high frequency sound source consists of a horn driver unit that is connected to a radiating orifice via a long flexible tube. This allows the source to be positioned in relatively confined locations. The source should produce a consistent calibrated output level which is largely unaffected by the routing of the tube as long as care is taken to avoid crushing the tube.

The orifice contains a small microphone that is connected to a preamplifier in the base of the driver unit. The output from this is available on a BNC socket on the base of the sound source. The microphone system produces an approximation to the free field 1m sound pressure level and this fulfils two roles: it allows integrity checking of the system, as well as real time measurement of acoustic transfer functions.

The delivery hose is around 34 mm O/D and 3 m in length; the nozzle is around 14 mm O/D.

The Noise Source Power Unit is a combined white/pink noise generator and power amplifier designed to drive a number of different Sound Sources.

The Power Unit can drive the Low Frequency Omni-directional Sound Source that covers the range 20 Hz to 500 Hz and the High Frequency Omni-directional Sound Source that covers the range 300 Hz to 10 kHz. The unit will also drive the Tailpipe and Intake Noise Simulator (TINS).

The Power Unit is a stable and calibrated device that should produce a consistent and repeatable acoustic output from the various Sound Sources.

The Power Unit provides filters that are selected automatically when a Sound Source is connected. Each Source has its own connecting cable with a connector unique to the Source. The Power Unit contains a digital signal processor, a Class D audio amplifier and a power supply. The processor produces white noise, pink noise or a swept sine wave, or processes an external input signal.

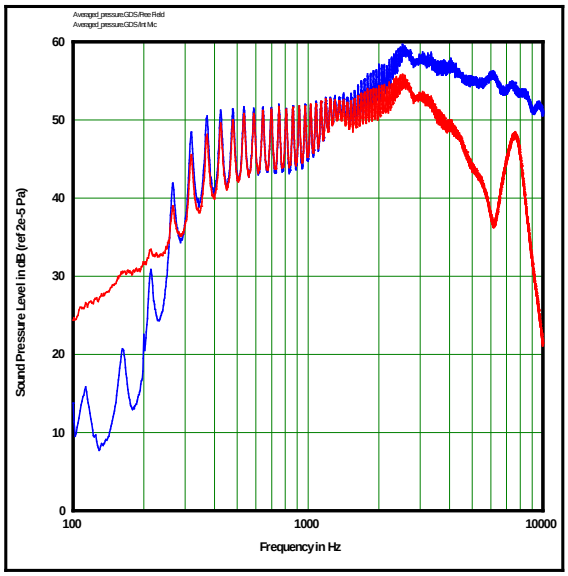
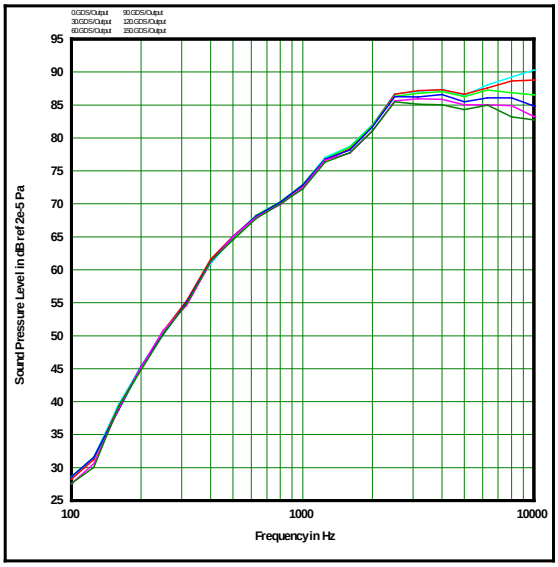


Figure HF2

Typical spectrum of High Frequency Source
Spatially averaged 1m SPL and signal from internal microphone
White noise at 0dB
1Hz resolution



Typical Directivity of High Frequency Source
1/3 Octave spectra
1m Free Field Sound Pressure Level

Outline Specifications

Noise level (SPL @ 1m):	54 dB @ 300 Hz; > 81 dB 2000 - 10000 Hz
Omni directionality:	± 1 dB < 2000 Hz; ± 2 dB 2000 - 6300 Hz
Orifice microphone:	Miniature ceramic