



SBU

# The results of Scientific Testing – “Magnetic Field Strengths” Silent Broadcast Unit (SBU) & Boostaroo. (9<sup>th</sup> September 2009)

## INTRODUCTION

An SBU is a small electronic passive device that connects to an audio source, and can be driven with headphone level audio signals.

The following tests were conducted on one sample original SBU and a new version SBU completed July 2009.

## AIM

The aim of this experiment is to compare the relative magnetic field strengths, produced by each of the SBUs.

The audio power source was provided by an IPOD, and an IPOD driving a Boostaroo.

The audio material was derived from a sample test file loaded onto the IPOD.

## MATERIALS

20MHz Dual trace oscilloscope.

Pickup coil 300 Ohms (air core).

IPOD Nano with test file loaded.

(The test file comprised 2 pulsed sinusoidal waveforms with slowly increasing and decreasing frequencies)

Boostaroo with input cable.

## PROCEDURE

1. The Original SBU was connected to the IPOD, the test file was started, and volume increased to maximum.
2. The pickup coil was connected to one input channel of the oscilloscope.
3. The pickup coil was moved around the exterior of the SBU and the peak voltages were monitored on the screen. The position that produced the largest voltages was noted and the pickup coil was fixed in this position for the remainder of the test.
4. The peak to peak voltage (Vpk-pk) was recorded and any visible distortion of the waveforms noted.
5. The July 2009 version of the SBU was connected and steps 3 & 4 were repeated.
6. The Boostaroo was connected between the Original SBU and the IPOD and steps 3, 4 & 5 were repeated.

## RESULTS

The pickup coil detected maximum field strength on the exterior of both the Original SBU and the July 2009 SLB, at the square end furthest from the 3.5mm plug.

**Original SBU                    5 mV**

**July 2009 SBU                230 mV**

Original SBU + Boostaroo    20 mV                    (very significant distortion)

July 2009 SBU + Boostaroo   500 mV                   (very significant distortion)

Original SBU + Boostaroo    14 mV                    (volume reduced for minimal distortion)

July 2009 BU + Boostaroo    300 mV                   (volume reduced for minimal distortion)

## CONCLUSION

The **July 2009 SBU** produces a magnetic field strength **at least 10 times** that of the Original SBU.

The **Boostaroo** produced a signal between 2 and 4 (**200 to 400%**) times that of the IPOD.

**However, the output at this level was significantly distorted and when the input level was reduced to achieve a clean signal the Boostaroo achieved a 50 to 300% increase.**