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## A RADIO FREQUENCY REFLECTION STRUCTURE WITH AIR FLOW CHANNEL

HP INC

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A radio frequency reflection structure with air flow channel

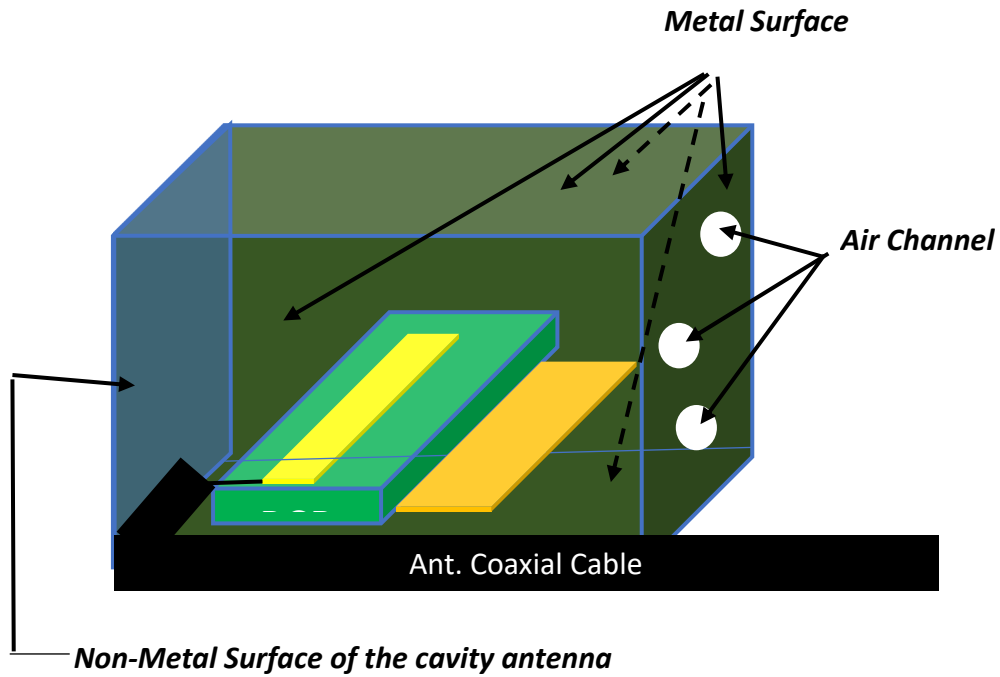
### **Abstract**

- **The highly integrated antenna design for the electric device is a trend to help produce performance better appearance and style. Full metal surface treatment is also a trend to deliver the better user experience in industry point of view. This invention will introduce a cavity antenna design which will provide the full metal environment scenario in laptop computer, and there will be an air channel RF reflector to improve the placement possibility. This air channel RF reflect will break through the limitation of the cavity antenna and provide the solution for the key components which need air space such like speaker box or thermal fan to improve the placement possibility.**

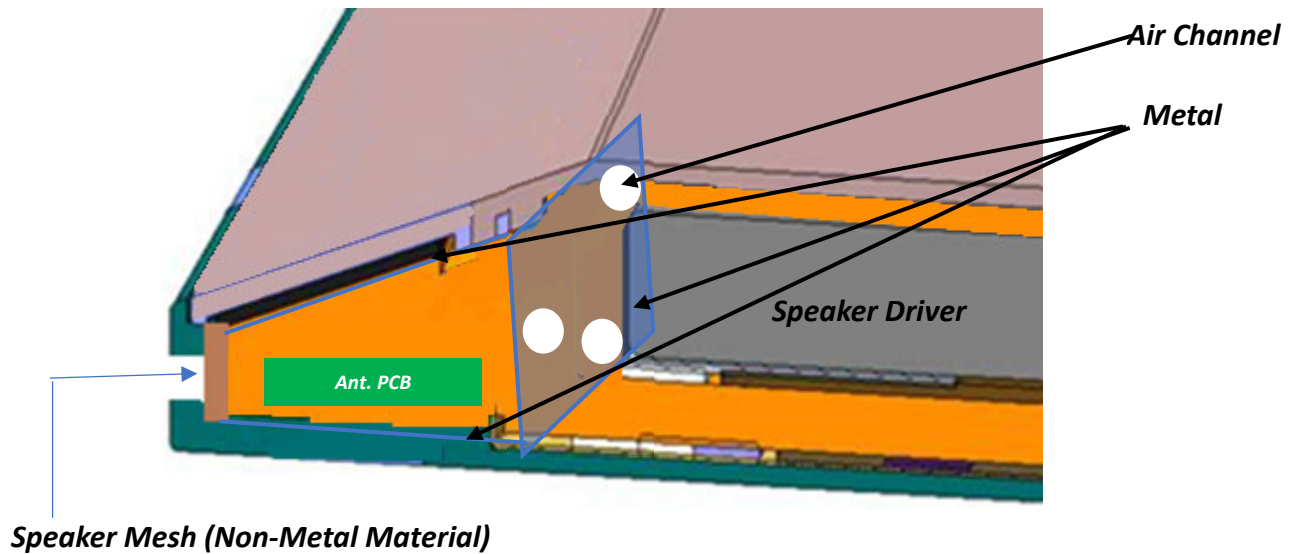
### **Description of Invention**

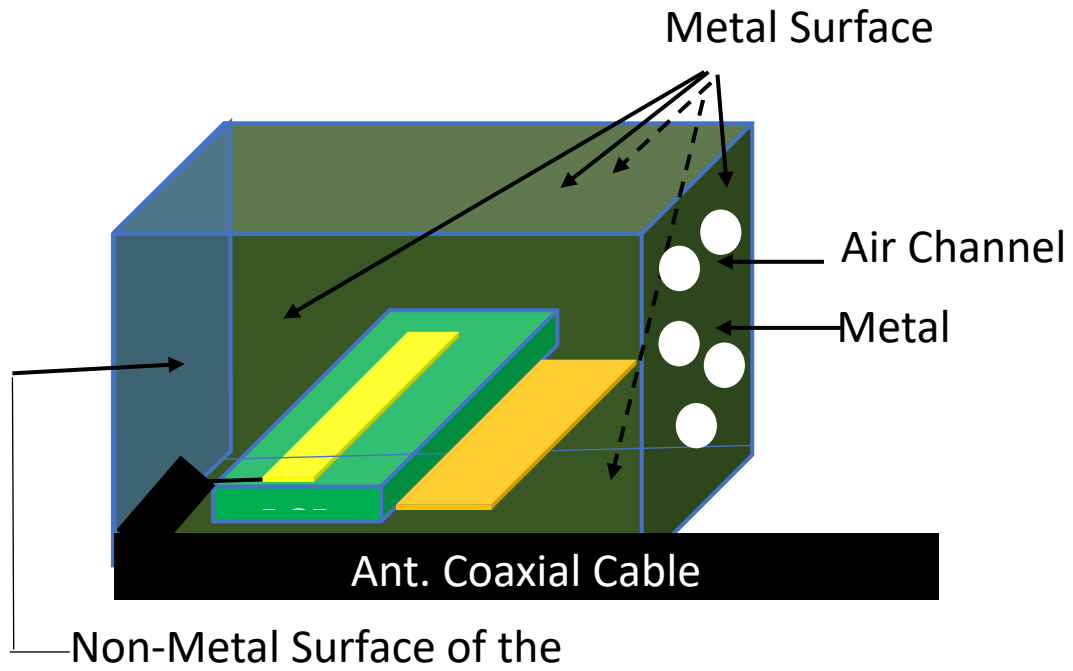
- **In this invention, the solution will be used for a cavity antenna. This cavity antenna include 6 surface and 5 surface material is metal and 1 surface will be non-metal metal material include air plastic ...etc.**
- **In this case one of the metal surfaces will remove part of the metal may be  $1/10 \lambda$  of the antenna application spectrum as an air channel. The air channel could let the air pass through and still perform as a part of the cavity antenna. So, the speaker drive could share the volume via the air channel, which is occupied by a cavity antenna.**

**Picture 1. A cavity antenna with 5 metal surface and 1 non-metal surface**



**Picture 2. An example to combine the speaker and cavity antenna design  
(Cross section view of the laptop computer base)**





*Disclosed by Albert Ma, Darren Tseng and Hong Wei Chou, HP Inc.*