

# Technical Disclosure Commons

---

Defensive Publications Series

---

April 2022

## AUTOMATIC DIAGNOSIS RF SHIELDING CAN ASSEMBLY

HP INC

Follow this and additional works at: [https://www.tdcommons.org/dpubs\\_series](https://www.tdcommons.org/dpubs_series)

---

### Recommended Citation

INC, HP, "AUTOMATIC DIAGNOSIS RF SHIELDING CAN ASSEMBLY", Technical Disclosure Commons, (April 11, 2022)

[https://www.tdcommons.org/dpubs\\_series/5063](https://www.tdcommons.org/dpubs_series/5063)



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

This Article is brought to you for free and open access by Technical Disclosure Commons. It has been accepted for inclusion in Defensive Publications Series by an authorized administrator of Technical Disclosure Commons.

# Automatic diagnosis RF Shielding Can assembly

## Abstract:

As there are several shielding can on the mother board, as shielding can is hard to be installed on the mother boards. Also shielding can is hard to be assembled by auto mechanical tool, but a bad assemble will cause more noise leakage from SSD, DDR memory, which will impact system antenna performance due to bad shielding can assembly, especially the common shielding can in the notebook design is not SMT, but manual assembled due to the shielded components (SSD/DDR modules) can be swapped and easy to be repaired.

## Problem Solved:

This disclosure tells a method to allow SW diagnosis if the shielding can on mother board is not correctly assembled.

Which helps to mitigate the assemble issue especially some repair place especially lots of place doesn't have the ability to test antenna performance to confirm the assemble performance.

## Prior Solutions:

The previous solution, operator is manual check the shielding can is installed correctly or not by their eye or antenna test in system level.

## Descriptions:

In traditional shielding can is design with rectangle shape like right white blocks, DDR, SSD

To design the pads nearing the corner of shielding can which is connecting to EC via resistor and placement could be for below Fig 1 and 2 as example

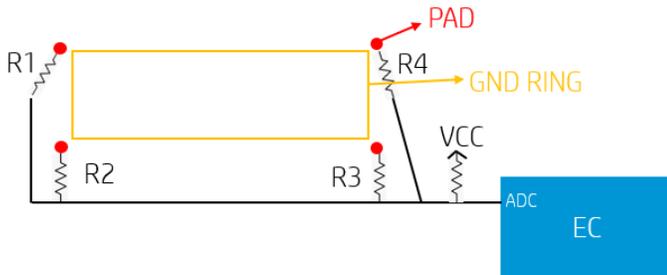


Figure 1. Sensing PAD is nearing the ground ring

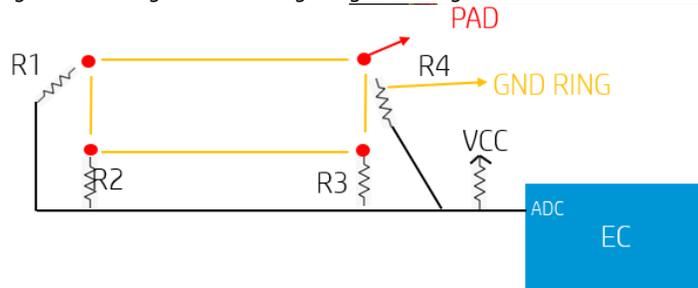


Figure 2. Sensing PAD inside the same rectangle of the ground ring

Mechanical design shielding can structure (e.g., conductive sponge) which with the ability can short the pad nearing the corners to ground ring.



Figure 3. Shielding Can with conductive sponge at 4 corners

The 4 pads nearing the corner will connecting to ground if shielding can is well assembled. Using ADC pin on EC, which can detect the divided voltage from the pads based on open or short will cause different voltage level so EC is also able to check the shielding can is assembled correctly or not by detecting these pads.

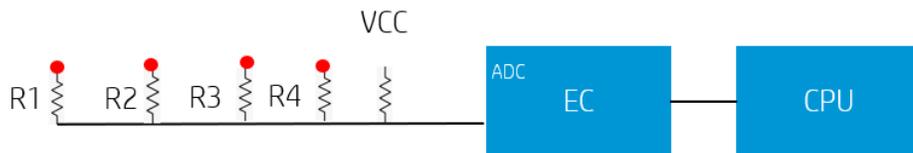


Figure 4. EC using ADC and pull up resistor to detect the PAD is connecting to ground or not.

As EC can detect the assembly status to shielding can, we can use SW to access this information to achieve SW diagnostic

### Advantages:

By using this simple design, we can easily use SW instead of manual check on the shielding can assembly situation, to prevent bad experience to user if caused by bad shielding can assemble to fix some issue not anywhere can test antenna.

Also doesn't require to have antenna test to confirm the assemble performance. As it can be part of SW diagnostic, it can be done automatically.

This concept is design with very low cost, and not impacting to system grounding due to in typically design will not have clip to catch up shielding can, even more this concept can provide better shielding in corner by the new designed ME structure (e.g., Sponge)



Figure 5. Typical shielding can corner is not sealed very solid if only using metal sheet

***Disclosed by Derek Hsu, James Pan, Sam Wang and Justin WU, HP Inc.***