

## APPLICATION NOTE

# Electromagnetic Compatibility for Open Housing Alvium Cameras

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V1.0.0

## Scope

Open housing Alvium cameras do not comply with standards for electromagnetic compatibility (EMC), because the open camera back enables electromagnetic interference with other electronic devices. This document is going to show how EMC-protective housings enable EMC compliance for open housing Alvium cameras.

Allied Vision has demonstrated the fulfillment of the requirements relating to the Alvium USB closed housing cameras with Directive 2014/30/EU (Electromagnetic compatibility).

## EMC best practice

For maximum effect, all requirements below should be fulfilled. You may adjust depending on your application.

- Ensure adequate grounding, especially if other electronics are included in the same housing with the camera: Chassis ground must be connected.
- Enable galvanic ground connections: Mounting plate and mounting screws must be free from paint.
- Use a closed housing made of conductive metal.
- Use only shielded cable outlets or connectors.
- Use only shielded cables.



### Consider heat dissipation

For a proper housing design, see the *Optimum Heat Dissipation for Housed Alvium Cameras application* note at:

[www.alliedvision.com](http://www.alliedvision.com) > Support > Technical Documentation > Alvium Cameras > Additional documents.

## Avoid large ground paths

Large ground paths can cause severe electromagnetic interference (EMI) between the camera and other electronic devices of your system. The camera and devices can even be damaged. We recommend you to:

- Connect all grounds to a common power outlet.
- Insure a common ground level for all devices of your system.

## Example: Alvium CSI-2 open housing camera

For this setup, the camera connects to an embedded board by an FPC cable, while the embedded board connects to a PC by a GigE cable. The EMC-protective housing encompasses the camera and the embedded board, the power supply cable and the GigE cable are fed through dedicated outlets of the housing. The setup passed the test for EMC compliance.

### Test setup

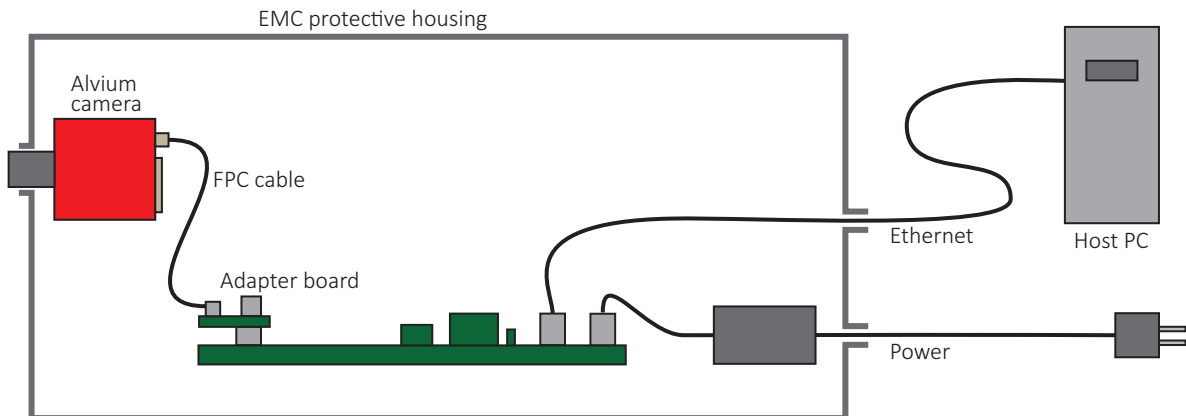


Figure 1: Testing EMC compliance for open housing Alvium CSI-2 cameras

### Bill of materials

Component	Allied Vision Product code	Product	Details
Camera	11491	Alvium 1500 C-050c   open housing   C-Mount	Model with ON Semiconductor PYTHON 480 color sensor
Embedded board	n.a.	Boundary Devices Nitrogen6_MAX Nit6Q_MAX_QCA_BRD i.MX6 Quad	Third-party product
Adapter board	12314	Nitrogen6_MAX adapter board	Allied Vision accessory
MIPI CSI-2 FPC cable	12316	MIPI CSI-2 FPC cable 120 mm	Allied Vision accessory
Power Supply	n.a.	Samsung USB charger ETA-U90EWEGSTD	Third-party product
Ethernet cable	n.a.	Ethernet CAT 6A	Third-party product
Ethernet connector	n.a.	RJ45 IK01754 inline coupler	Third-party product
Housing	n.a.	Universal enclosure 222 × 146 × 82 mm Aluminium by Hammond Electronics Product code 1550Z220	Third-party product

Table 1: EMC compliance test for open housing Alvium USB cameras | bill of materials

## Conclusion

The test setup shows how Alvium open housing cameras can be designed into applications to be EMC compliant. This is successful when you stick firmly to [EMC best practice](#) recommendations.

## Contact

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