

APPLICATION NOTE

Electromagnetic Compatibility for Open Housing Alvium Cameras

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Scope

For **closed housing** Alvium cameras, Allied Vision has demonstrated compliance with the requirements of

- Directive 2014/30/EU (Electromagnetic compatibility)
- 47 CFR Part 15 Subpart B, Class B (FCC Class B)
- CAN ICES-3 (B) / NMB-3 (B).

Open housing Alvium cameras do not comply with these standards.

This document shows how **additional EMC housings** enable EMC compliance for **open housing** Alvium cameras that do not comply with standards for electromagnetic compatibility (EMC) because the open camera back enables electromagnetic interference between the camera and other electronic devices.

EMC best practice

For maximum effect, all requirements below should be fulfilled. They can be adjusted 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.



Ensure heat dissipation

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

www.alliedvision.com/en/support/technical-documentation.

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.
- Ensure a common ground level for all devices of your system.

Presumption of conformity for a test setup



The following test setup is an example that is not offered for sale

We did not declare conformity for the test setup because we will not introduce it to the market as a product.

You can build your own EMC housing, see [Bill of materials](#) on page 3.

Tests were passed successfully, proving that the test setup fulfills the requirements to comply with the following directive and standards.

Directive 2014/30/EU

For the directive 2014/30/EU, we have tested according to the following standards:

- EN 61000-6-2:2005
- EN 61000-6-3:2007
- EN 61000-3-2:2006
- EN 61000-3-3:2008.

FCC Class B

We have tested according to 47 CFR Part 15 Subpart B, Class B (FCC Class B) regulations.

CAN ICES-3 (B) / NMB-3 (B)

We have tested according to CAN ICES-3 (B) / NMB-3 (B) regulations.

Test setup with an EMC housing

For the test setup, an open housed Alvium CSI-2 camera connects to an embedded board by an FPC cable, while the embedded board connects to a host PC by an Ethernet cable. The EMC housing encompasses the camera and the embedded board. The power supply cable and the Ethernet cable are fed through dedicated outlets of the housing.

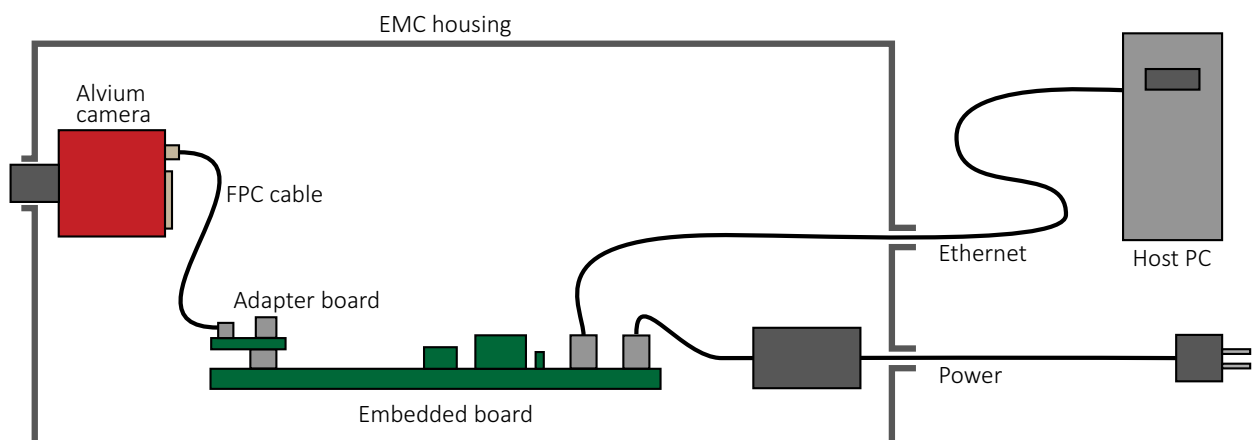


Figure 1: Testing EMC compliance for open housing Alvium CSI-2 cameras

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 in-line coupler	Third-party product
Housing	n.a.	Universal enclosure 222 × 146 × 82 mm Aluminum by Hammond Electronics Product code 1550Z220	Third-party product

Table 1: EMC compliance test for open housing Alvium CSI-2 cameras | bill of materials

Conclusion

The test setup shows that Alvium open housing cameras can be designed into applications to be EMC compliant. We recommend you to stick firmly to [EMC best practice](#) recommendations for an EMC compliant design.

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