Using the STEVAL-OET002V1 MDI BRR board with EMIF02-02OABRY

Introduction

The STEVAL-OET002V1 is a medium-dependent interface (MDI) board which includes the EMIF02-02OABRY filter, in compliance with BroadR-Reach™ specifications for EMI, ESD and differential impedance. BroadR-Reach™ (BRR) is an Ethernet, two unshielded twisted pair (UTP) wire protocol for data communication

The STEVAL-OET002V1 board is able to filter parasitic and undesirable common and differential signals.
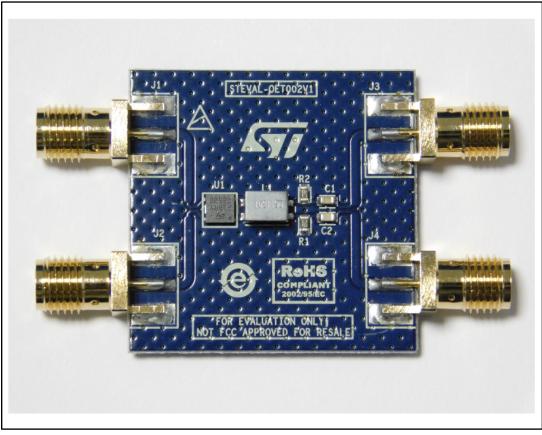
Figure 1: STEVAL-OET002V1 MDI BRR board

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1.1 Overview

Key features of the STEVAL-OET002V1 MDI BRR board include:

- EMIF02-02OABRY highly integrated solution designed to suppress EMI noise and protect against ESD
- Attenuation profile compliant with BroadR Reach™ requirements, from - 40 °C to 125 °C
- Compliant with ISO10605, ISO7637-3 standards
- RoHS compliant

The demo board consists of:

- DC decoupling capacitors
- a termination resistor
- a common filter
- a low pass filter and ESD protection (EMIF02-02OABRY)
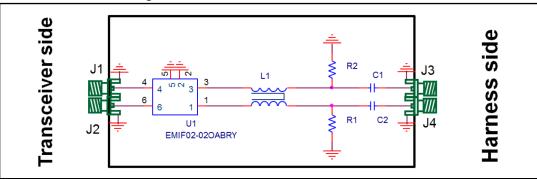- four RF SMA connectors

The EMIF02-02OABRY low pass filter ensures that ESD and transient voltages on the MDI do not result in transceiver failure.

The four RF SMA connectors allow you to connect the board to a vector network analyser (VNA) for Sddxx curve assessment.

One board is required for each BRR transceiver.

1.2 Connections

Figure 2: STEVAL-OET002V1 circuit schematic

The figure above shows:

- - C1 and C2: AC coupling capacitors 100 nF
- - R1 and R2: termination resistor 1 kΩ
- - L1: common filter (ACT45L-201-2P)
- - U1: low pass filter and ESD protection (EMIF02-02OABRY)
- - J1, J2, J3 and J4: RF SMA connectors.

1.3 Using the board

To use the board, connect:

1. to transceiver side (J1, J2): BroadR-Reach transceiver wires (TRD_N and TRD_P pins) and GND
2. to harness side (no GND needed) (J3, J4): UTP

Now, communication data (e.g., from camera to display) can be transmitted using the BRR protocol with EMI, ESD and transient voltage immunity.
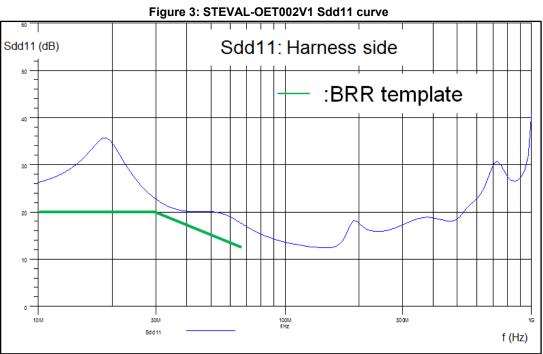
2 STEVAL-OET002V1 Sddxx curves

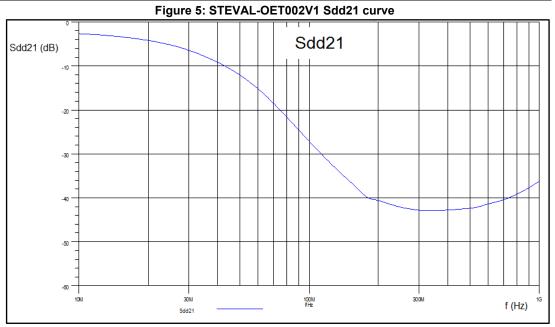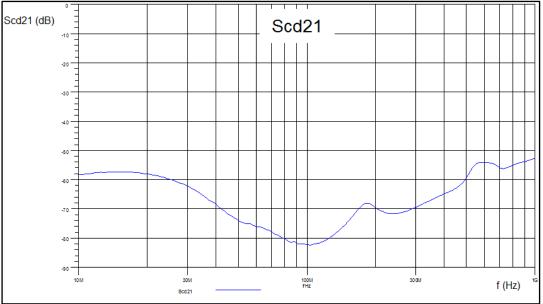Figure 3: STEVAL-OET002V1 Sdd11 curve

Figure 4: STEVAL-OET002V1 Sdd22 curve

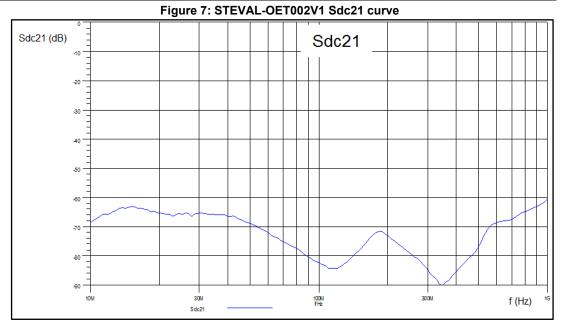**Figure 5: STEVAL-OET002V1 Sdd21 curve**

Figure 6: STEVAL-OET002V1 Scd21 curve

Figure 7: STEVAL-OET002V1 Sdc21 curve

3 References

EMC Test Specification for BroadR-Reach® Transceivers

4 Revision history

Table 1: Document revision history

Date	Version	Changes
13-Jul-2016	1	Initial release.
03-Nov-2016	2	Changed low pass filter and ESD protection name to EMIF02-02OABRY throughout the document.

IMPORTANT NOTICE – PLEASE READ CAREFULLY