

November 11, 2009

VCCI Council

**Restriction on the use of Impedance Stabilization Network (ISN) to be used for the measurement of telecommunication ports conducted EMI**

As we have notified you regularly VCCI Council will start dealing with the filing of conformity verification reports on telecommunication ports conducted EMI from April 2010. This notice is about Impedance Stabilization Network (ISN) to be used for the measurement of EMI in this case.

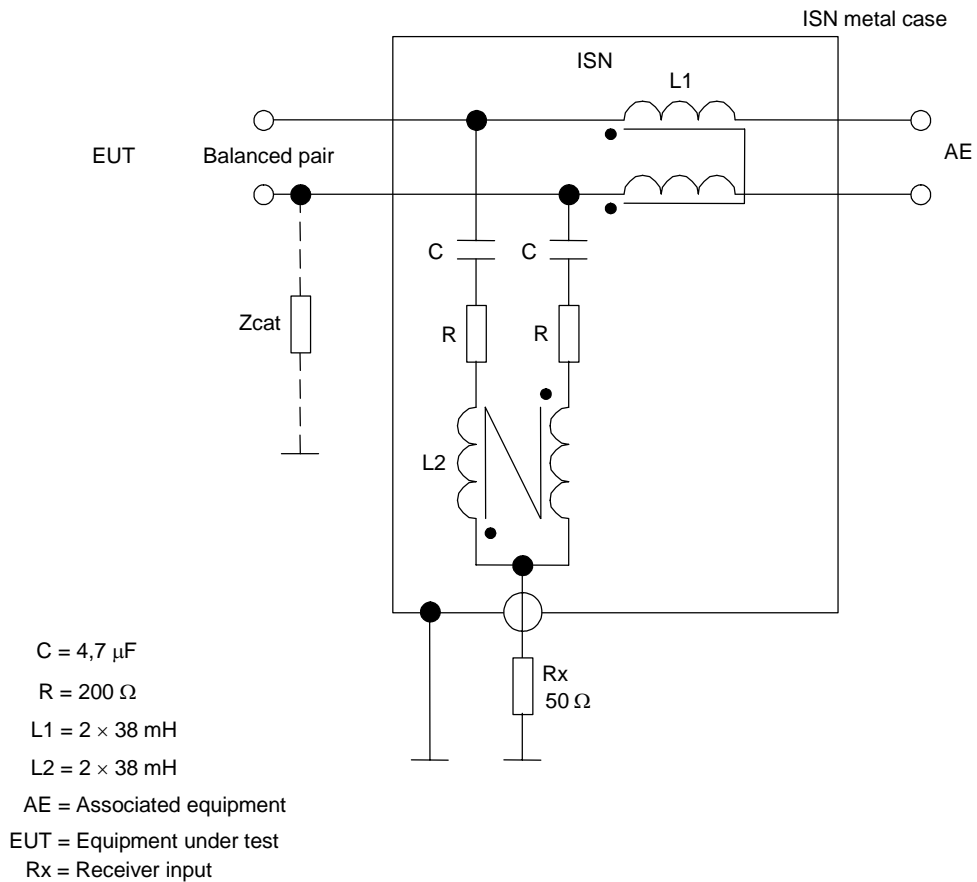
There are two types of circuits of which an ISN is made (see Figures 5-7 and 8-11 in the attachment). Please be advised that ISN of Figure 8-11 type shall not be used in the situation described in the warning note to each figure in order to avoid obtainment of wrong results.

If you are not sure about the type of ISN you are going to use, please ask the supplier of the ISN.

The restriction on the use of ISN warned in this notice is going to be reflected in the VCCI Technical Requirements (V-3/2009.04) at the next revise time which can be viewed in the Technical Requirements(V-3/2010.04) in the VCCI Website after April 1, 2010..

## 1.5 Schematic diagrams of examples of impedance stabilization networks(ISN)

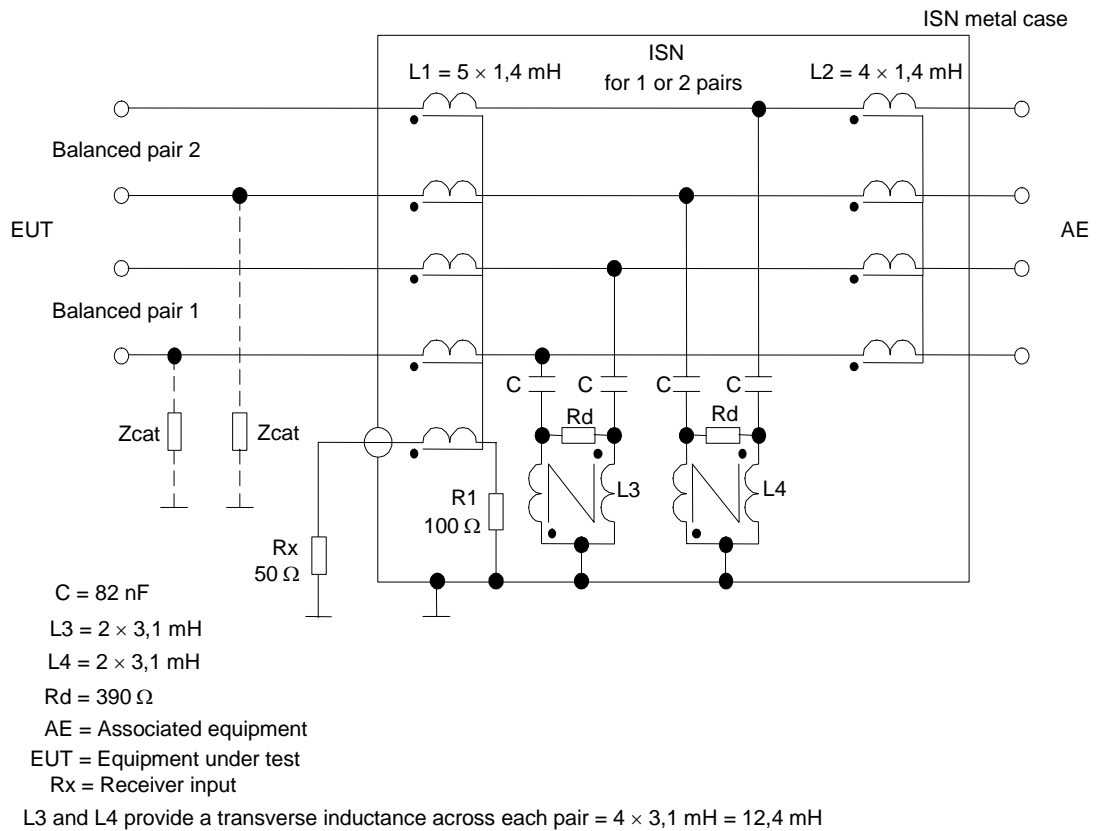
( will be revised April, 2010 )



NOTE 1 Nominal voltage division factor defined in 5.2.3 e) = 9,5 dB.

NOTE 2 Zcat represents the unbalance network required to adjust the LCL of the ISN to the values specified in 5.2.3 c) 1) – 3).

**Figure5 – ISN for use with unscreened single balanced pairs**

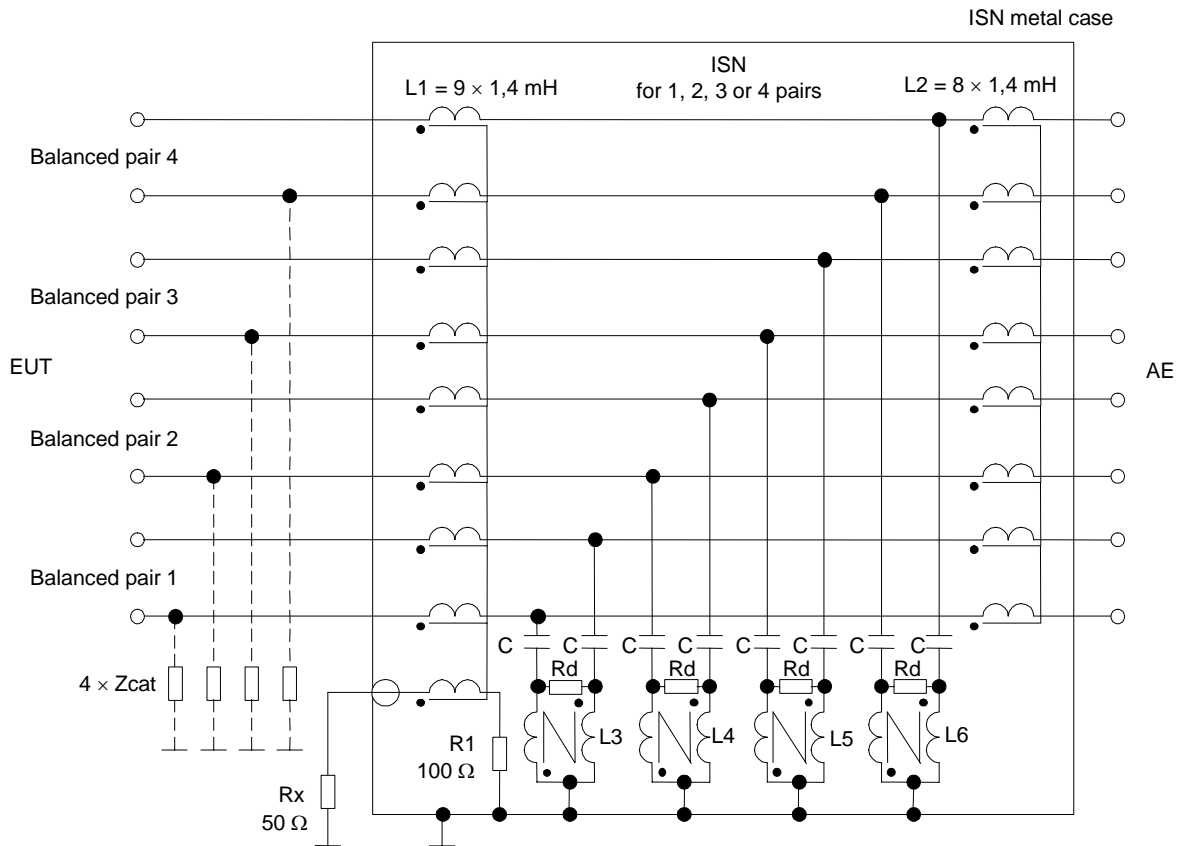


NOTE 1 Nominal voltage division factor defined in 5.2.3 e) = 9,5 dB.

NOTE 2 Zcat represents the unbalance network required to adjust the LCL of the ISN to the values specified in 5.2.3 c) 1) – 3).

NOTE 3 This ISN can be used to measure common mode disturbances equally well on a single unscreened balanced pair or on two unscreened balanced pairs.

**Figure 6 – ISN with high longitudinal conversion loss (LCL) for use with either one or two unscreened balanced pairs**



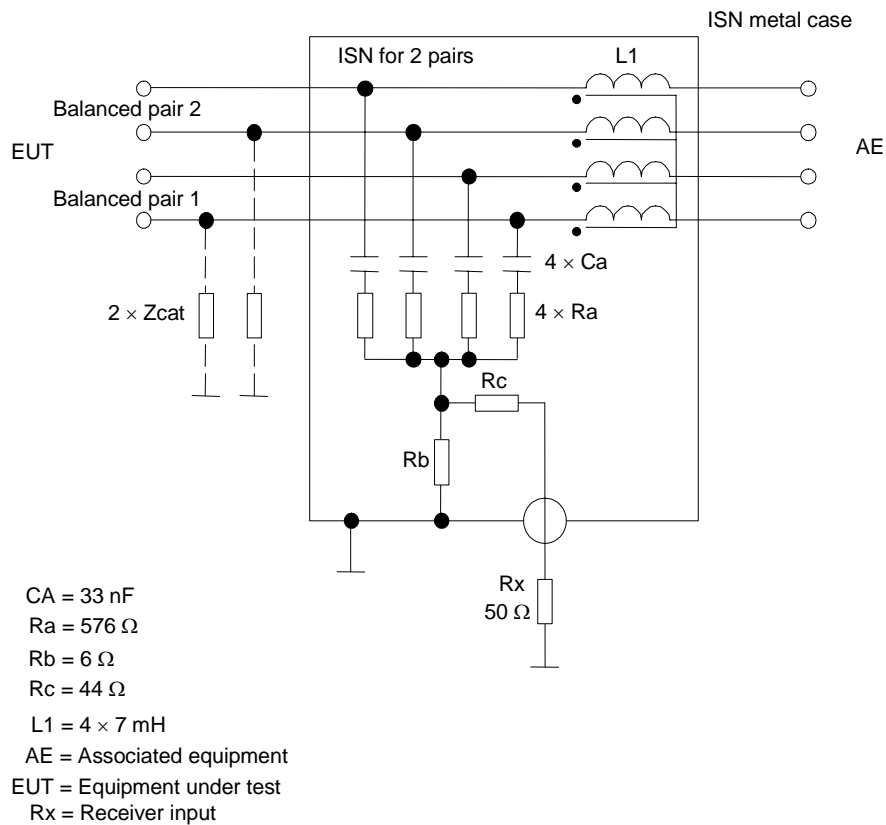
- $C = 82$  nF
- $R_d = 390 \Omega$
- AE = Associated equipment
- EUT = Equipment under test
- Rx = Receiver input
- $L_3, L_4, L_5$  and  $L_6 = 2 \times 3,1$  mH
- $L_3, L_4, L_5,$  and  $L_6,$  provide a transverse inductance across each pair =  $4 \times 3,1$  mH =  $12,4$  mH

NOTE 1 Nominal voltage division factor defined in 5.2.3 e) =  $9,5$  dB.

NOTE 2  $Z_{cat}$  represents the unbalance network required to adjust the LCL of the ISN to the values specified in 5.2.3 c) 1) – 3).

NOTE 3 This ISN can be used to measure common mode disturbances equally well on a single unshielded balanced pair, or on two, three or four unshielded balanced pairs.

**Figure 7 – ISN with high longitudinal conversion loss (LCL) for use with one, two, three, or four unshielded balanced pairs**

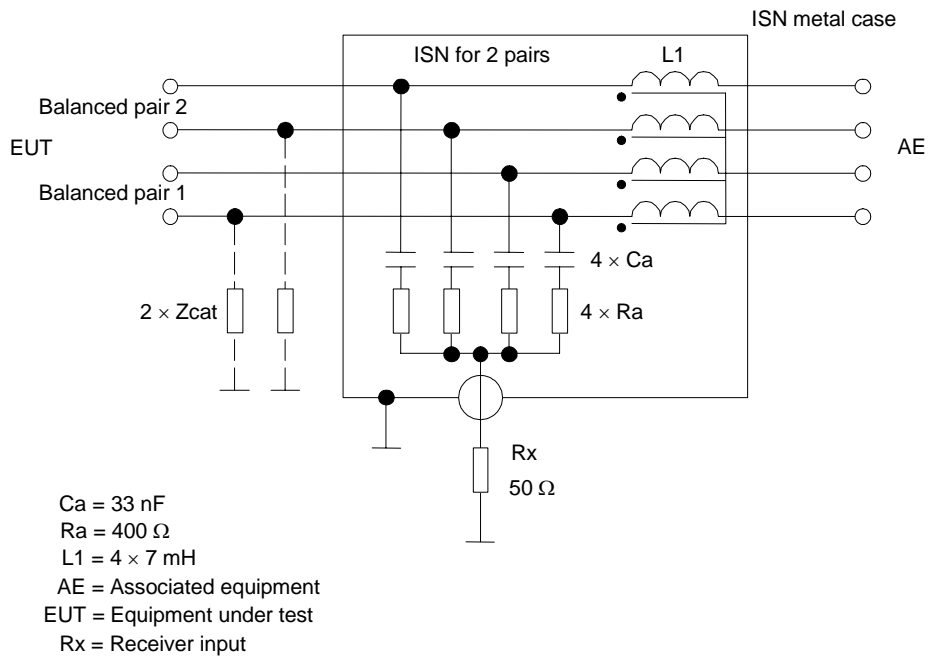


NOTE 1 Nominal voltage division factor defined in 5.2.3 e) = 34 dB.

NOTE 2 Zcat represents the unbalance network required to adjust the LCL of the ISN to the values specified in 5.2.3 c) 1) – 3).

**WARNING** This ISN must not be used to measure common mode disturbances on unscreened pair cables connected to telecommunication ports that employ only one active unscreened balanced pair.

**Figure 8 – ISN, including a 50  $\Omega$  source matching network at the voltage measuring port, for use with two unscreened balanced pairs**

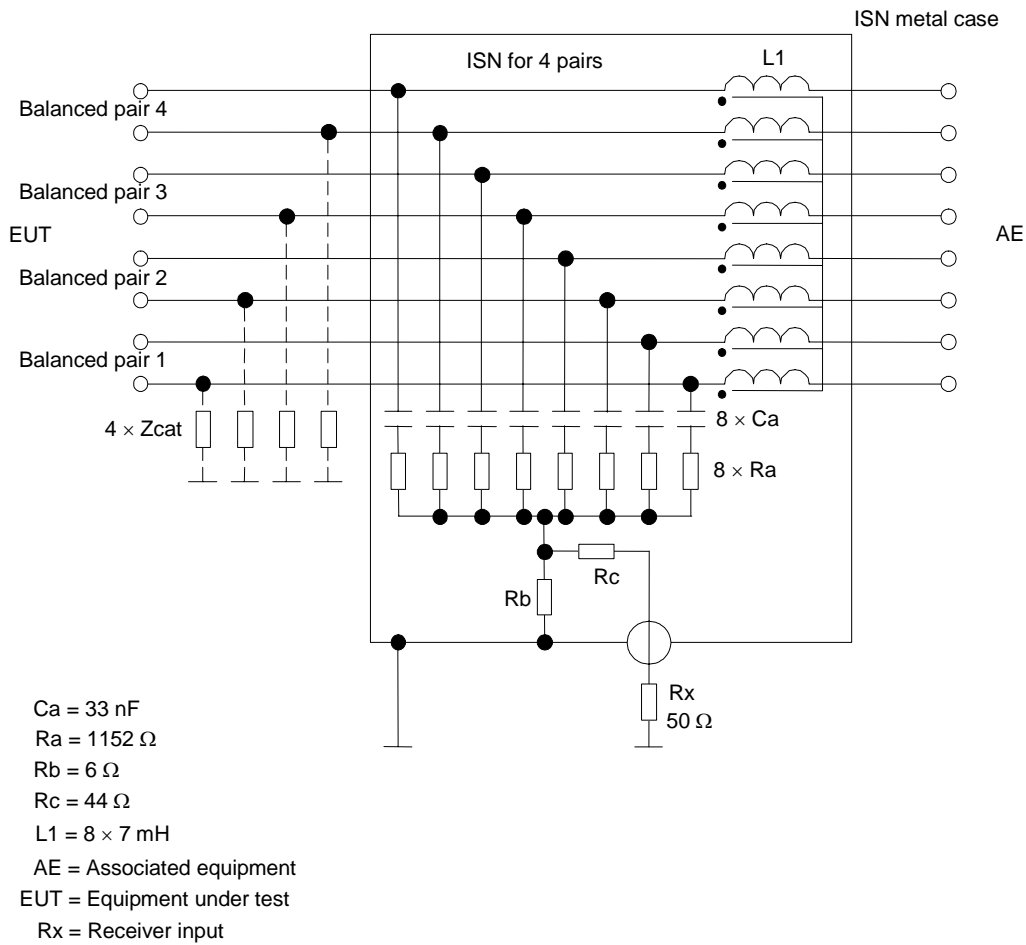


NOTE 1 Nominal voltage division factor defined in 5.2.3 e) = 9,5 dB.

NOTE 2  $Z_{cat}$  represents the unbalance network required to adjust the LCL of the ISN to the values specified in 5.2.3 c) 1) – 3).

**WARNING** This ISN must not be used to measure common mode disturbances on unscreened pair cables connected to telecommunication ports that employ only one active unscreened balanced pair.

**Figure 9 – ISN for use with two unscreened balanced pairs**

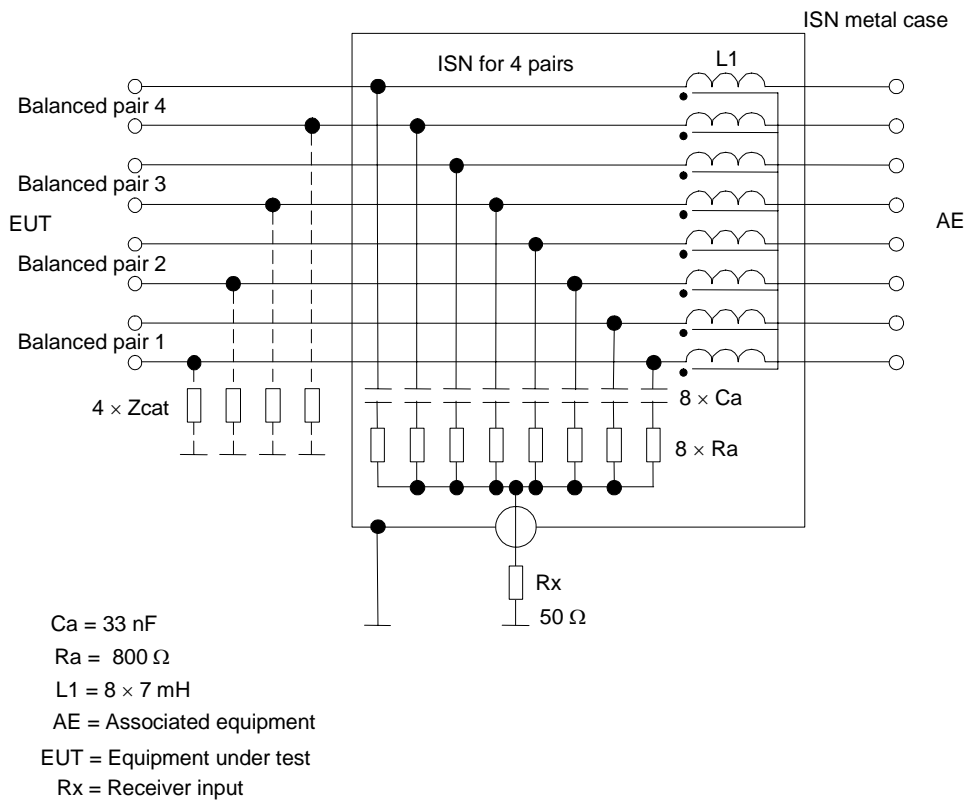


NOTE 1 Nominal voltage division factor defined in 5.2.3 e) = 34 dB.

NOTE 2  $Z_{cat}$  represents the unbalance network required to adjust the LCL of the ISN to the values specified in 5.2.3 c) 1) – 3).

**WARNING** This ISN uses the terminations of all four pairs to achieve the specified impedances and hence must not be used to measure common mode disturbances on unshielded pair cables connected to telecommunication ports that employ other than four unshielded balanced pairs.

**Figure 10– ISN, including a 50  $\Omega$  source matching network at the voltage measuring port, for use with four unshielded balanced pairs**



NOTE 1 Nominal voltage division factor defined in 5.2.3 e) = 9,5 dB.

NOTE 2 Zcat represents the unbalance network required to adjust the LCL of the ISN to the values specified in 5.2.3 c) 1) – 3).

**WARNING** This ISN uses the terminations of all four pairs to achieve the specified impedances and hence must not be used to measure common mode disturbances on unshielded pair cables connected to telecommunication ports that employ other than four unshielded balanced pairs.

**Figure 11 – ISN for use with four unshielded balanced pairs**