

CONTACT CURRENT

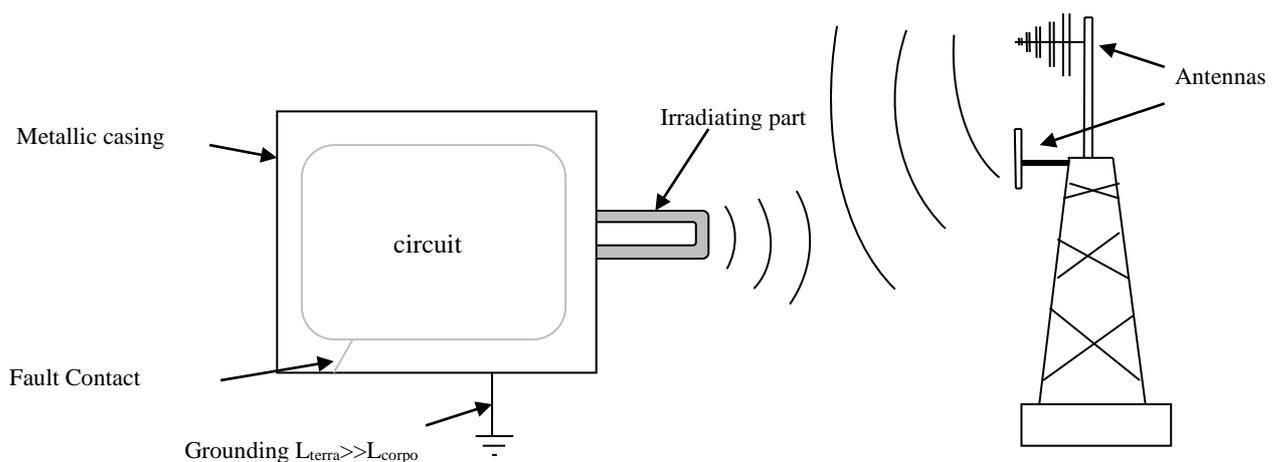
According to studies made by ICNIRP (International Commission on Non-Ionizing Radiation Protection), have been developed guidelines for the exposure to electromagnetic fields, to prevent damage to health of citizens and workers. The last reference standard based on such research is the 2013/35/EU.

One of the mandatory parameters to test for the current regulation is the value of the contact current.

"Contact current (IC) is a current that appears when a person comes into contact with an object in an electromagnetic field. [Rif.2013/35/EU]"

The cases where it is necessary to perform the contact current measurement are:

- When an object with metal is immersed in an electromagnetic field (near antenna).
- When an object with a metal casing has non-insulated parts that emit RF signals (RF gluers and RF drying systems).
- When an object with metal casing works in RF but that, for a breakdown or any malfunctioning is not completely isolated



In all these cases, the radio frequency electromagnetic field produces an accumulation of electric charges on its metallic surface, which, in the event of contact without precautions, can discharge to the ground by flowing through the limbs and the body generating associated transient currents. Even in the presence of grounding the problem still exists, because the lower inductance L of the human body compared to the one of the cable, causes the contact current flowing through the operator's body instead of the cable's

The safety regulation for workers requires objects exposed to radio frequency fields to be tested so to check that the contact current value is below the limits, as in the table below:

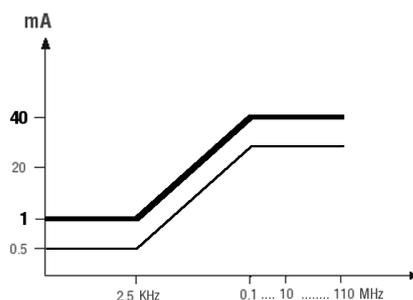
FREQUENCY (f)	THE STATIONARY IC CONTACT CURRENT [mA] (RMS)
Up to 2,5	1,0
$2,5 \leq f < 100$	$0,4 f$
$100 \leq f \leq 10\ 000$	40

f is the frequency in KHz

The exposure limit for the population instead, has a maximum level, which is half of the limit for workers.

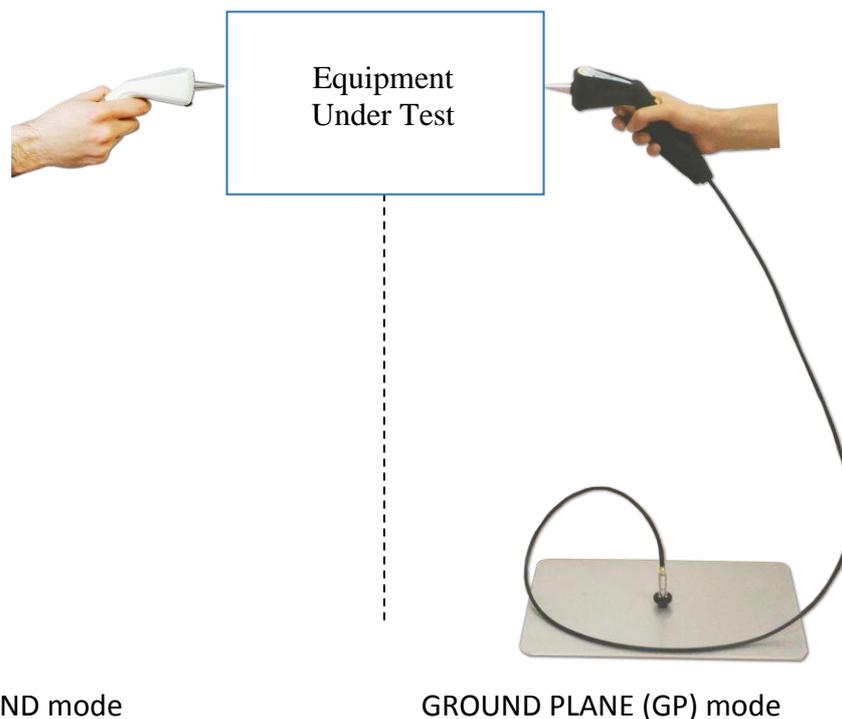
CONTACT CURRENT MEASUREMENT

According to the Directive, the CCM (B version) provides the contact current measurement value in mA in a range from 10 Hz to 10 MHz or, according to the earlier Directive 2004/40/EU from 10 Hz to 110 MHz (model A). For this instrument, the two separate limits for occupationally exposed workers and the population are expressed by the following graph.



In order to ensure maximum safety for the operator who performs the measurement of the contact current flowing through his body, the CCM (Contact Current Meter) provides a double measurement:

- **GROUND PLANE mode:** measures the contact current that flows to the ground through the standardized impedance provided (Z-2251) that simulates the operator's human body. Through this mode the perfect insulation is ensured so the operator is not exposed to the currents flow
- **HAND mode** measures the contact current flowing to the ground directly through the operator's body. To ensure the safety of the operator performing the measurement, this mode is possible only after having performed the measurement in Ground Plane mode and | that the level is not dangerous



For further information:

- [datasheet](#)
- [operating manual](#)
- [website](#)