METHOD 1 (R1 + R2) ON A RADIAL CIRCUIT

WHY TEST AT THE FAR END, NOT THE SWITCH?

First, the naming — and it's simpler than it looks.

SYMBOL	CONDUCTOR
R1	**Line**
Rn	**Neutral**
R2	**CPC** — and more broadly, any **green-and-yellow** conductor you can test end to end: CPCs, main protective bonding, supplementary bonding

One exception.

The **earthing conductor** is green-and-yellow too, but you don't do a continuity test on it — it's verified by a different, live test. So R2 in practice means your bonding conductors and your final circuit CPCs.

THE METHOD

1. **Disconnect** the circuit's **line** from its protective device and its **CPC** from the earth bar.
2. **Link them together** — a temporary **dead short** between R1 and R2. Use a lever connector, a connector block, or dedicated linking leads.
3. **Test at the far end** — at the **furthest load**, between line and CPC.

✋ **Test at the load, not at the switch.** Testing at the switch tells you the cable got that far. Testing at the furthest light fitting tells you the whole circuit is continuous. That's the point of the test.

WORKED EXAMPLE: A LIGHTING CIRCUIT

1 mm² twin & earth, roughly 2 m
Table B1 · 1.0/1.0 mm² (R1 + R2) = **36.2 mΩ/m**

Expected R = (36.2 × 2) ÷ 1000
Expected ≈ 0.072 Ω

Measured: **0.36 Ω**

Why the measured value was five times the estimate.
The lighting circuit also includes a length of **1.5 mm² three-core-and-earth** for the two-way switching, which adds both length and a different CSA. On a circuit *you* installed, knowing the length and the cable size, the calculation holds up.

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WORKING THE LENGTH BACK OUT OF THAT 0.36 Ω
Length = (0.36 × 1000) ÷ 36.2
Length ≈ 9.9 m
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FUNCTIONAL SWITCHING, PROVED FOR FREE

With the leads still on, operate the light switch and retest. You should get an **open circuit**. Switch it back, and the reading returns. That proves the switch is doing its job — and it's why you get an open circuit on your first attempt if you forgot to close the switch in the first place.

⚠ **An open circuit reading on the instrument** shows as a distinctive symbol and, on most testers, a noise. If you see it on a circuit you expect to be continuous, check your switch position before you check anything else.

THE 1.67 RATIO

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2.5 MM² / 1.5 MM² TWIN & EARTH
2.5 ÷ 1.5 = 1.67

A smaller CSA means a higher resistance,
so the CPC is 1.67 × the line conductor.

Line measured 0.25 Ω → CPC ≈ 0.25 × 1.67 = 0.42 Ω
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Remember this one — it comes straight back on ring finals. The ratio is the line CSA divided by the CPC CSA, so it changes with the pairing: 4 mm² twin & earth has a 1.5 mm² CPC, giving 4 ÷ 1.5 =
2.67
. (Most ring finals are 2.5 mm²; **On-Site Guide Table H2.1** lists the standard circuit cable sizes.)

GN3 · Section 2 · test method 1 · R1 + R2 ★

GN3 · Table B1 · 1.0/1.0 mm² (R1 + R2) = 36.2 mΩ/m · 1 mm² alone = 18.1

OSG · Table H2.1 · standard circuit cable sizes

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