

Annex N (normative)

Impulse test generators

(see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.4.2, 7.4.3 and Clause G.5)

NOTE Extreme care is necessary when using these test generators due to the high electric charge stored in the capacitor C_1 .

N.1 ITU-T impulse test generators

The circuit in Figure N.1, using the component values in references 1 and 2 of Table N.1, is used to generate impulses, the C_1 capacitor being charged initially to a voltage U_c .

Circuit reference 1 of Table N.1 generates 10/700 μs impulses (10 μs virtual front time, 700 μs virtual time to half value) as specified in ITU-T Recommendation K.44 to simulate lightning interference in the TELECOMMUNICATION NETWORK.

Circuit reference 2 of Table N.1 generates 1,2/50 μs impulses (1,2 μs virtual front time, 50 μs virtual time to half value) as specified in ITU-T Recommendation K.44 to simulate transients in power distribution systems.

The impulse wave shapes are under open-circuit conditions and can be different under load conditions.

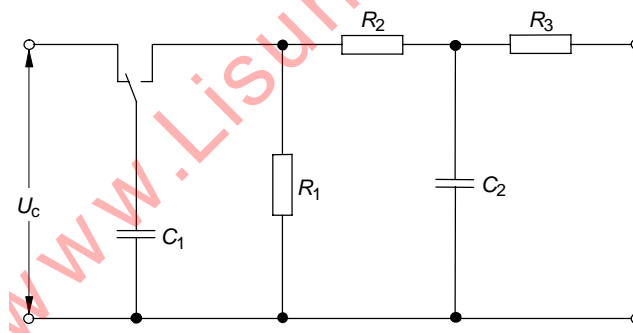


Figure N.1 – ITU-T impulse test generator circuit

N.2 IEC 60065 impulse test generator

The circuit in Figure N.2, using the component values reference 3 in Table N.1, is used to generate impulses, the C_1 capacitor being charged initially to a voltage U_c . The switch used in Figure N.2 is a critical part of the circuit. See 10.1 of IEC 60065, for further information.

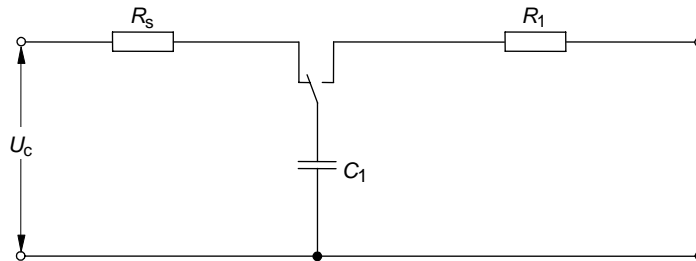


Figure N.2 – IEC 60065 impulse test generator circuit

Table N.1 – Component values for Figures N.1 and N.2

Reference	Test impulse	Figure	C_1	C_2	R_1	R_2	R_3	R_s	See
1 ^a	10/700 μ s	N.1	20 μ F	0,2 μ F	50 Ω	15 Ω	25 Ω	–	1.5.7.3, 2.10.3.9, 6.2.2.1, 7.4.3 and item b) of Clause G.5
2 ^b	1,2/50 μ s	N.1	1 μ F	30 nF	76 Ω	13 Ω	25 Ω	–	1.5.7.2, 2.10.3.9 and item a) of Clause G.5
3 ^c	–	N.2	1 nF	–	1 k Ω	–	–	15 M Ω	1.5.7.3 and 7.4.2

^a Reference 1 impulse is typical of voltages induced into telephone wires and coaxial cables in long outdoor cable runs by nearby lightning strikes to earth.

^b Reference 2 impulse is typical of earth potential rises caused either by lightning strikes to power lines or by power line faults.

^c Reference 3 impulse is typical of voltages induced into antenna system wiring caused by nearby lightning strikes to earth.