

EE-510 HIGH VOLTAGE

PRESENTED BY
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(2023EEM1049)

PROPER CENTRE-TAP RECTIFIER WITH RESISTIVE AND INDUCTIVE LOAD:

Component used:

1-phase transformer 230v || 15-0-15v

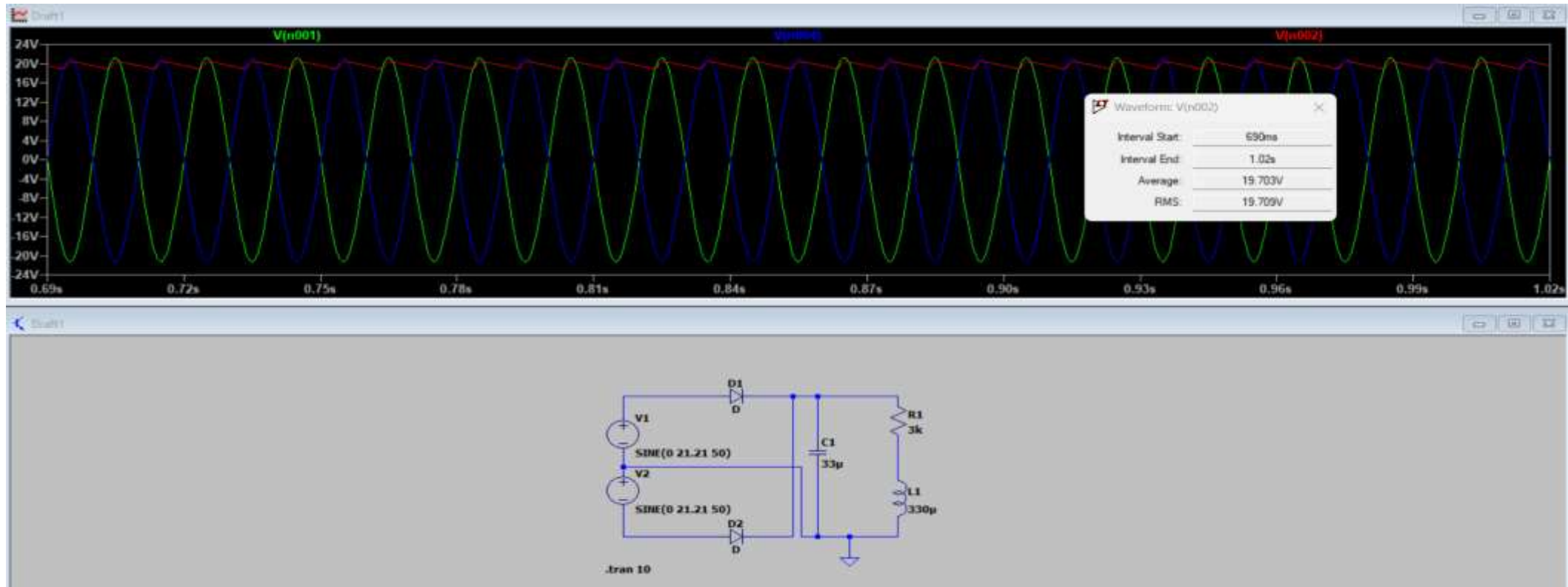
Diode(1N4007)

Resistance 3Kilo ohm

Inductance 330 micro Henry

Filter capacitance 33 micro Farad,50V

Simulation in LT-spice:



DSO Results:



Calculation:

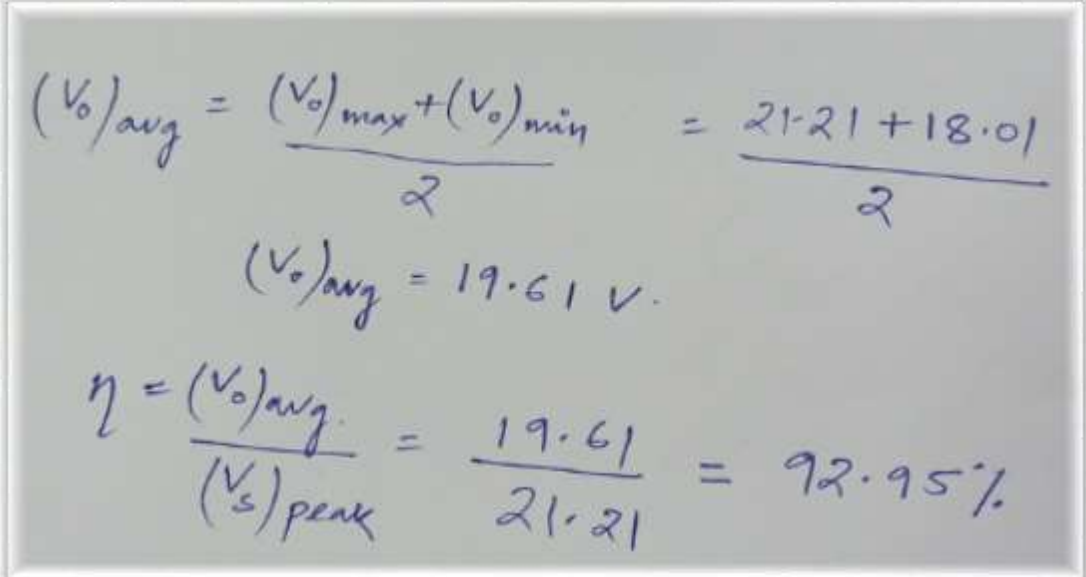
$$V_{in\ peak} = 15\sqrt{2}\ V$$

$$\delta V = \frac{I}{4fc}$$

$$\delta V = 1.6\text{v}$$

$$2\delta V = \text{Ripple} = 3.2\text{v}$$

$$\eta = \frac{V_{out}}{V_{inpeak}} = \frac{19.615}{21.21} * 100 = 92.95\%$$



Handwritten calculations on a chalkboard:

$$(V_o)_{avg} = \frac{(V_o)_{max} + (V_o)_{min}}{2} = \frac{21.21 + 18.01}{2}$$
$$(V_o)_{avg} = 19.61\ V.$$
$$\eta = \frac{(V_o)_{avg}}{(V_s)_{peak}} = \frac{19.61}{21.21} = 92.95\%$$

THANK YOU