



INTRODUCTION

360° has been retained to measure and document electrical transients produced when switching on supplied Transformers and a matching Brand-2 5G pool light that has been connected per product instructions and operated in a manner representative of a typical usage scenario. The transformers under test are Brand-2 branded transformers (Models "X" / "Y") as well as Brand-3 (Models "3"/"4") and Brand-4 (Models "1" / "2").

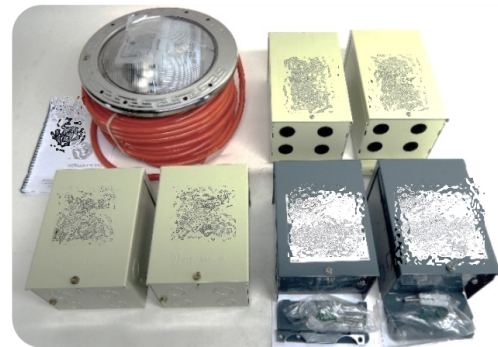


Figure 1: Supplied Transformers and Brand-2 5G Light

Procedure and Measurement

A Tektronix TDS 644B Digital Real-Time Oscilloscope was used to measure and analyze any generated electrical transients. In this process, each transformer was connected per the product's instructions to the supplied Brand-2 5G pool light. TDS 644B's probes were then connected to the power connections between the Brand and the transformer. Each transformer was configured for a maximum voltage of either 13 or 14v (depending on model tested) as per the product's instructions.

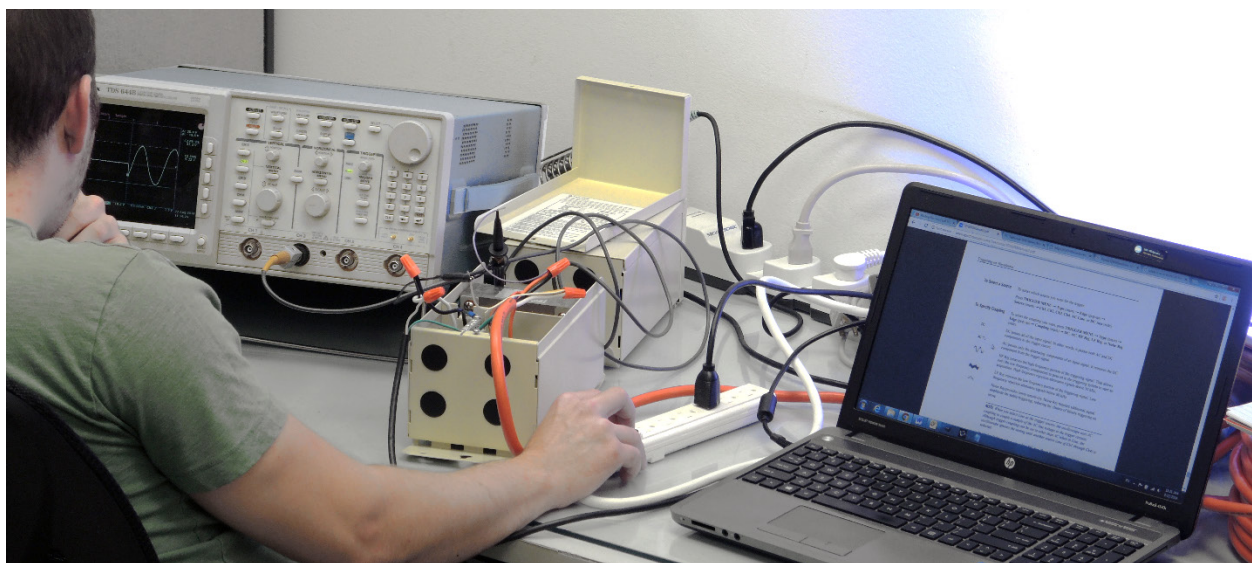


Figure 2: Measuring power waveforms with a Tektronix TDS 644B Oscilloscope's probes and Brand connected to transformer

Under Test

Prior to testing, each powers supply was opened to investigate the construction and prepare connections. Once opened, it was noted that these power supplies are little more than a transformer, which greatly reduces the probability of transients.

After properly connecting each transformer to the Brand and power source, probes from the oscilloscope were connected to the power connections for the Brand. The TDS 644B oscilloscope monitored and displayed the voltage waveform.

Shown below (*Figure 5*) is an example of the power waveform displayed with the transformer / Brand powered on (this was the case for all transformers tested).

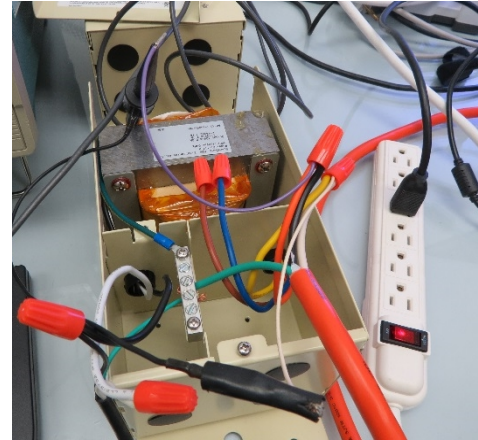


Figure 3: Transformer connected to Brand-2 and Power source

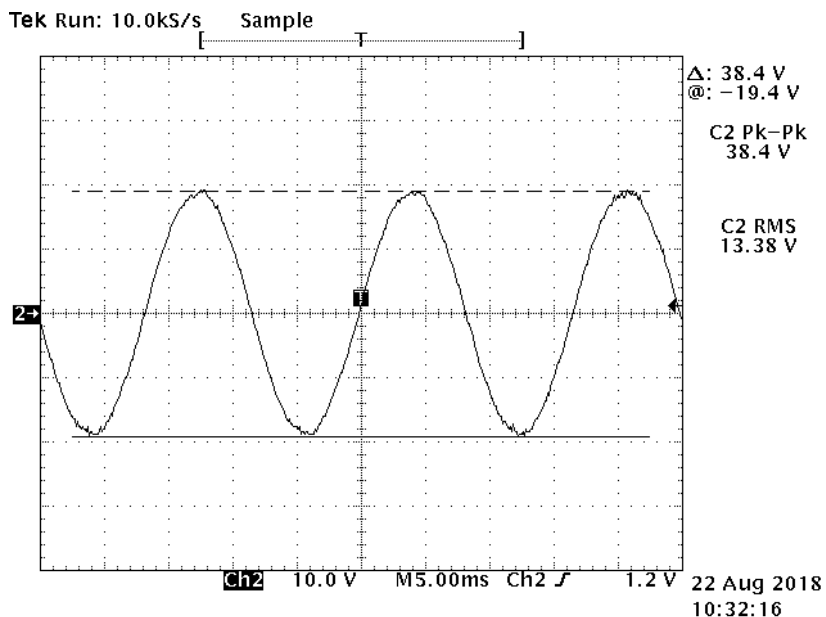


Figure 4: Standard waveform captured while Transformer and Brand-2 are powered ON

To determine electrical transients when switching the power on/off, the TDS 644B was configured to trigger when power was initially applied, this event being when transients due to a power supply are most likely to occur. The below images show the waveforms for the tested transformers / Brand being turned OFF and then ON to capture electrical transients.

Note that in the following, **RED CIRCLES** on the images are used to show where electrical transients would occur.

Brand-2 TRANSFORMERS – MODELS "X" / "Y"

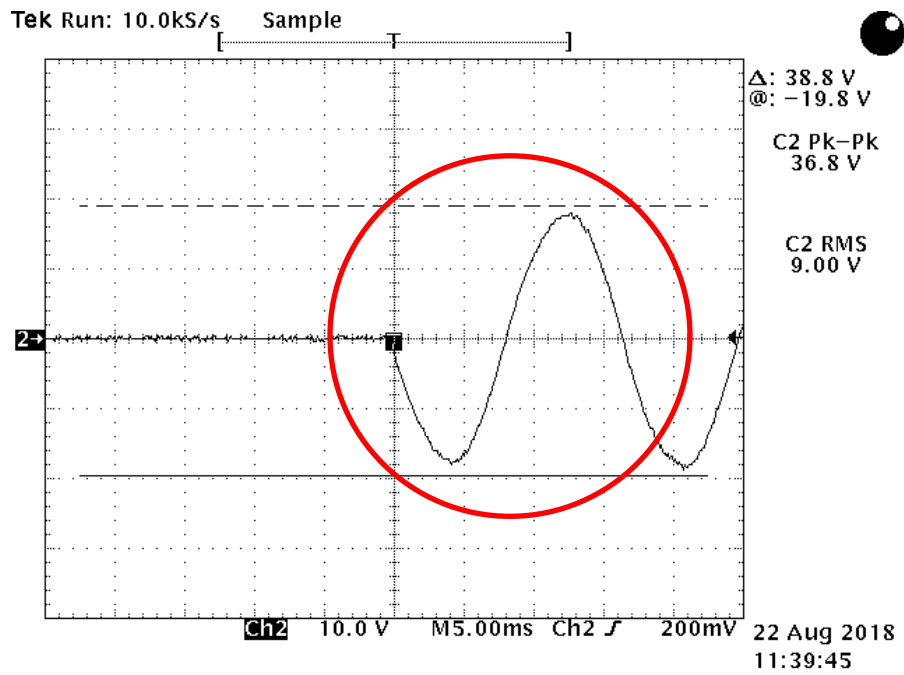


Figure 5: Electrical Transient test for Brand-2 Transformer model "X"

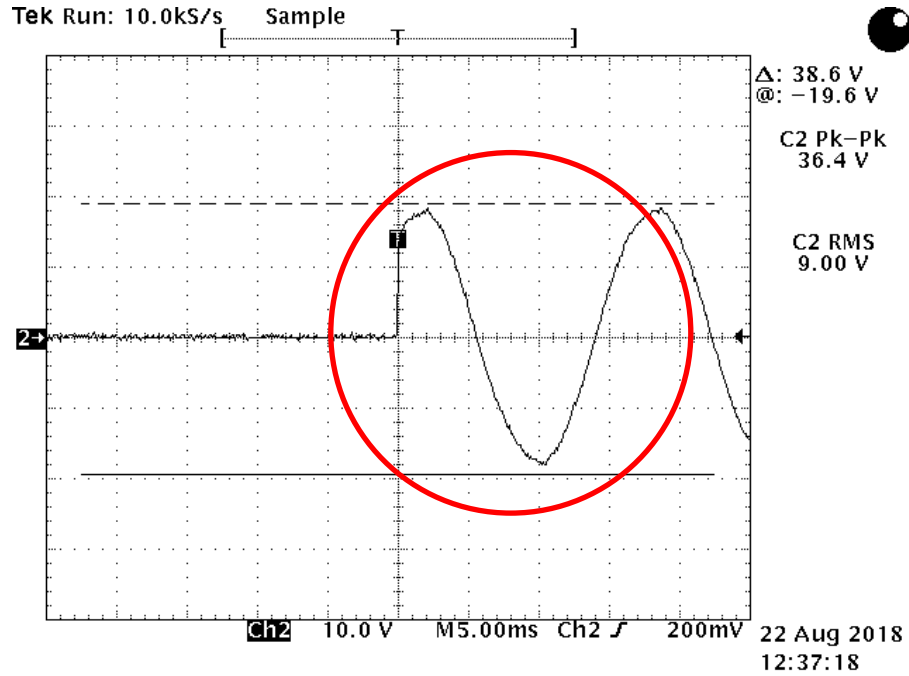


Figure 6: Electrical Transient test for Brand-2 Transformer model "Y"

Brand-4 TRANSFORMERS – MODELS "1" / "2"

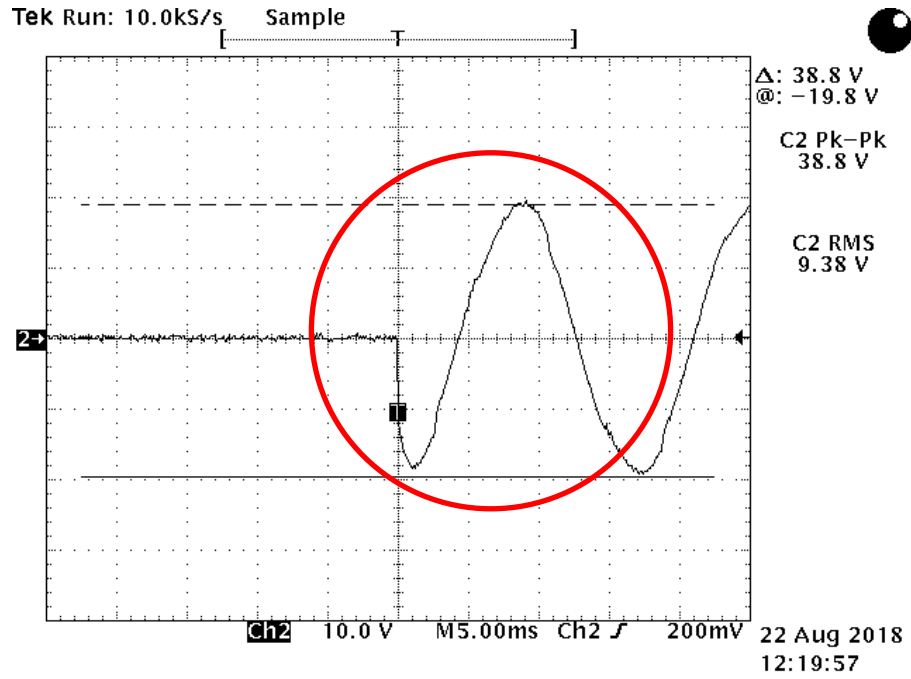


Figure 7: Electrical Transient test for Brand-4 transformer model "1"

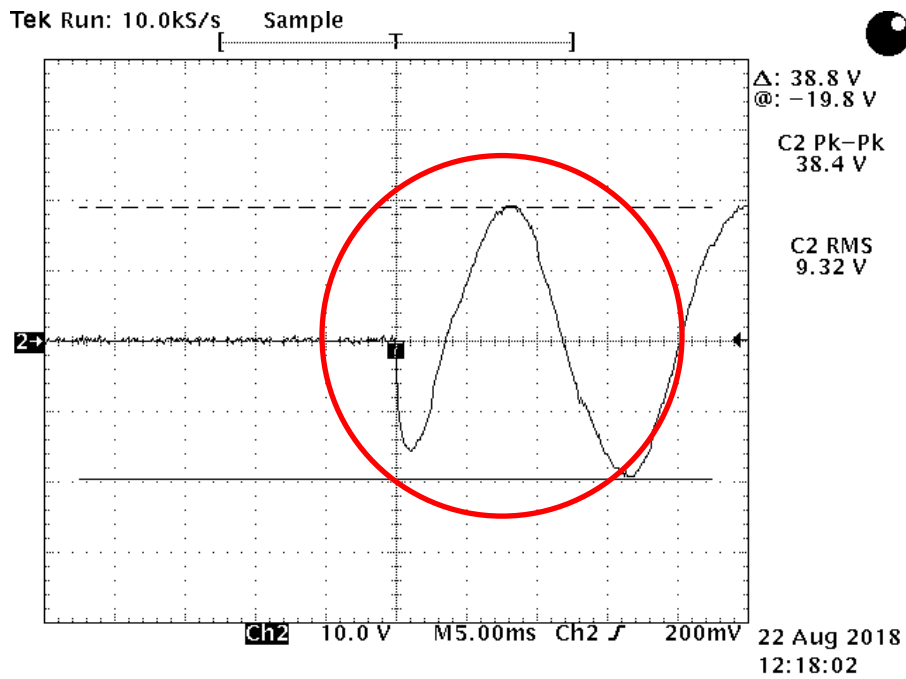


Figure 8: Electrical Transient test for Brand-4 Transformer model "2"

Brand-3 TRANSFORMERS – MODELS "3" / "4"

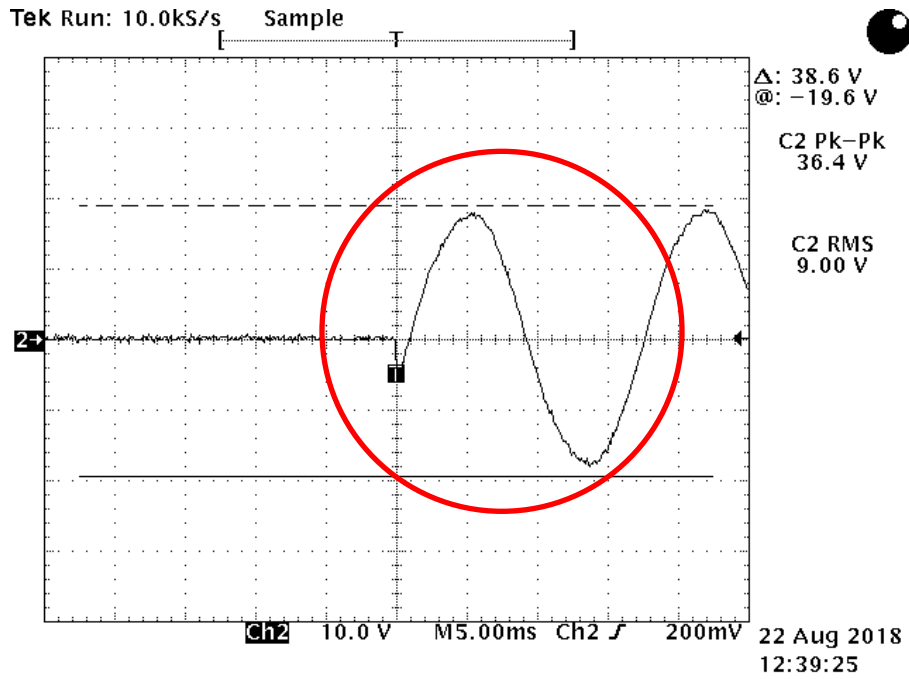


Figure 9: Electrical Transient test for Brand-3 transformer Model "3"

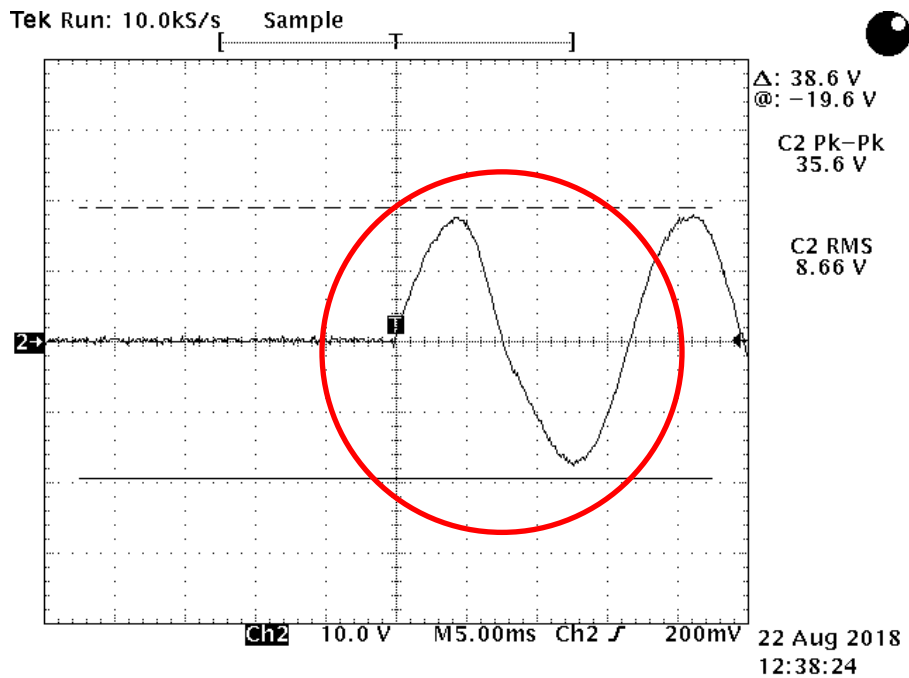


Figure 10: Electrical Transient test for Brand-3 transformer Model "4"

Conclusion

Based on the images and data collected and shown above, it was found that **none** of the transformers tested exhibit measureable electrical transients when switching power OFF / ON to the transformers / Brand-2 5G Pool Light.

Reviewed by: KDM RNS