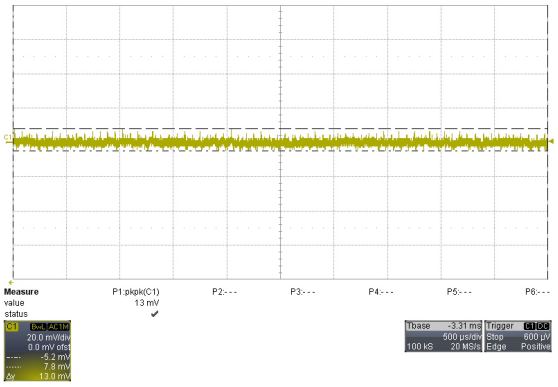
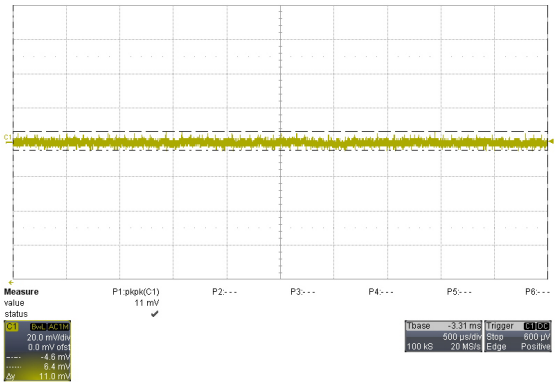
# Ripple and Noise Measurement Report

## TVN 05-2410WI without external capacitors

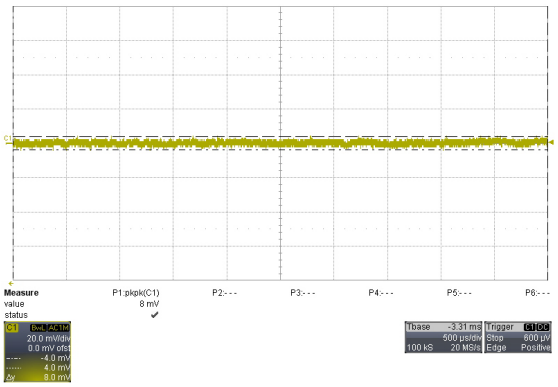
100% of Full Load at 24 Vin: Ripple&Noise = 13 mVp-p



50% of Full Load at 24 Vin: Ripple&Noise = 11 mVp-p

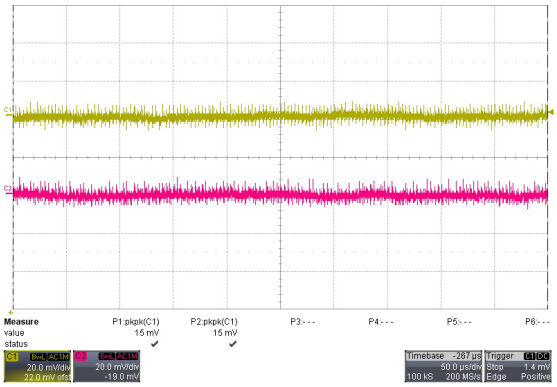


0% of Full Load at 24 Vin: Ripple&Noise = 8 mVp-p

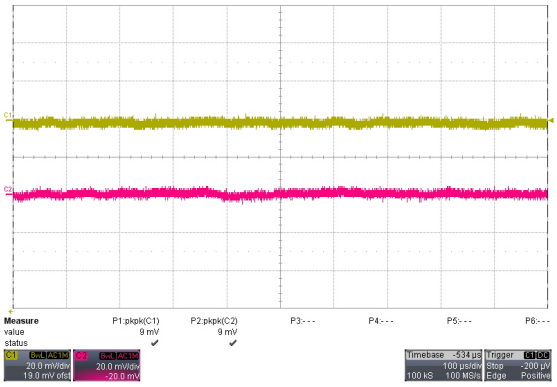


## TVN 05-4822WI without external capacitors

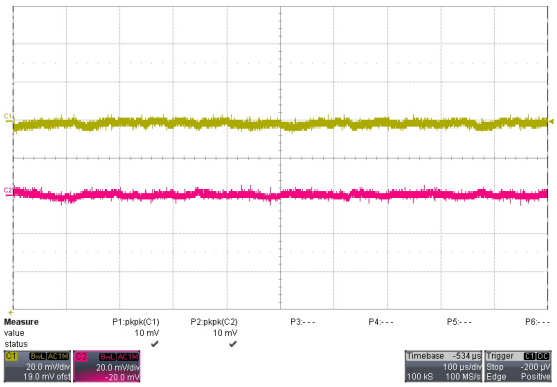
100% of Full Load at 48 Vin: Ripple&Noise = 15 mVp-p



50% of Full Load at 48 Vin: Ripple&Noise = 9 mVp-p



0% of Full Load at 48 Vin: Ripple&Noise = 10 mVp-p



The data test by the probe: PP016 (X10) (300 MHz BW) with LeCroy 44MXs-B (20 MHz BW)

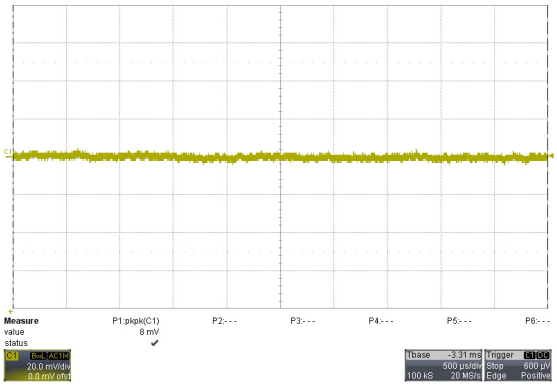
When X10 probe is used, the min. score of the probe at 20 mV/div, the product get Ripple & Noise with 7–8 mVp-p under no electricity, which is close to the specified value 10 mVp-p typ. After discussing with the supplier of the probe, we intend to use the probe of 1:1 to do the test on these items with 10 mVp-p Ripple & Noise. At this condition, the min. scare can be 2 mV/div., to reduce the difference of measurement.

PS: When the signal is smaller than the min. scare of the probe, if we used 10:1 probe setting, which means 10 times enlarge, we may get un-accurate value.

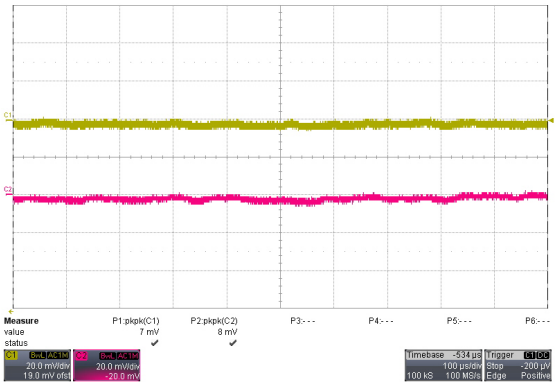
## Ripple and Noise Measurement Report

Below figures show you the oscilloscope without connecting to product and probe. When the score is bigger, it's not suitable to small signal.

8 mVp-p at 20 mV/div



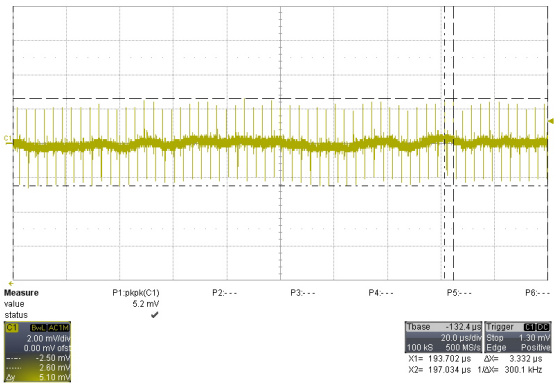
7–8 mVp-p at 20 mV/div



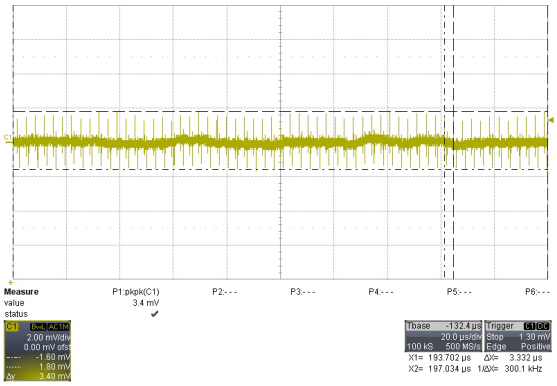
### TVN 05-2410WI without external capacitors

Data test by the probe: PP016 (X10) (10 MHz BW) with LeCroy 44MXs-B (20 MHz BW)

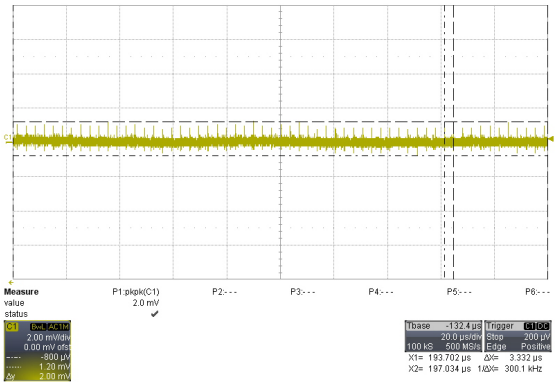
100% of Full Load at 24 Vin: Ripple&Noise = 5.2 mVp-p



50% of Full Load at 24 Vin: Ripple&Noise = 3.4 mVp-p



0% of Full Load at 24 Vin: Ripple&Noise = 2.0 mVp-p

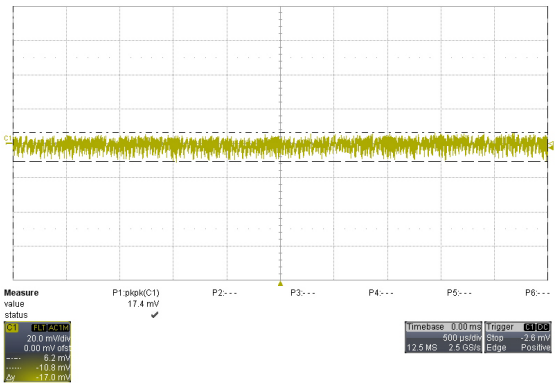


We compared with another type - Tektronix +P6101B (1:1, 15 MHz) with LeCroy +PP016 (1:1, 10 MHz). The testing result is very close. That means the product tested by 10 MHz BWL is enough to measure accurate R&N value.

Suggestion: With regards to the issue of measurement accuracy and scope BWL, we suggest to specify the value with 10 MHz from datasheet.

## Ripple and Noise Measurement Report

The maximum Ripple&Noise has been measured at high Vin by 2% of Full Load as following.




So we suggested two types of external capacitor for reference by different load conditions:

**5% - 100% of full load:**
The capacitor value is recommended using 10 uF / 50 V MLCC at each output.

**0% - 100% of full load:**
The capacitor value is recommended using 47 uF / 50 V Aluminum Electrolytic Capacitor at each output.

| Ripple and Noise at Ta = 25°C and Full Load | Typical Specifications | Maximum Specifications |
|---|---|---|
| **without capacitor** | 10 mVp-p | 15 mVp-p |
| **5% - 100% of full load (with 10uF/50V MLCC)** | 5 mVp-p | 10 mVp-p |
| **0% - 100% of full load (with 47uF/50V ELCO)** | 5 mVp-p | 10 mVp-p |