Direct sampling measurements
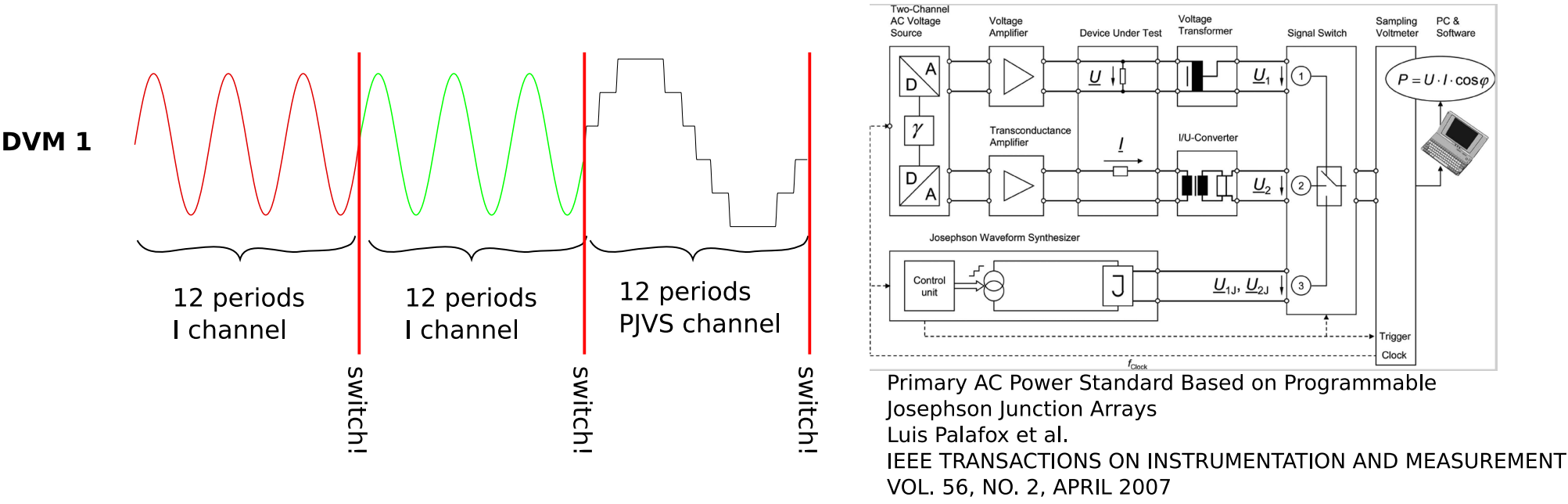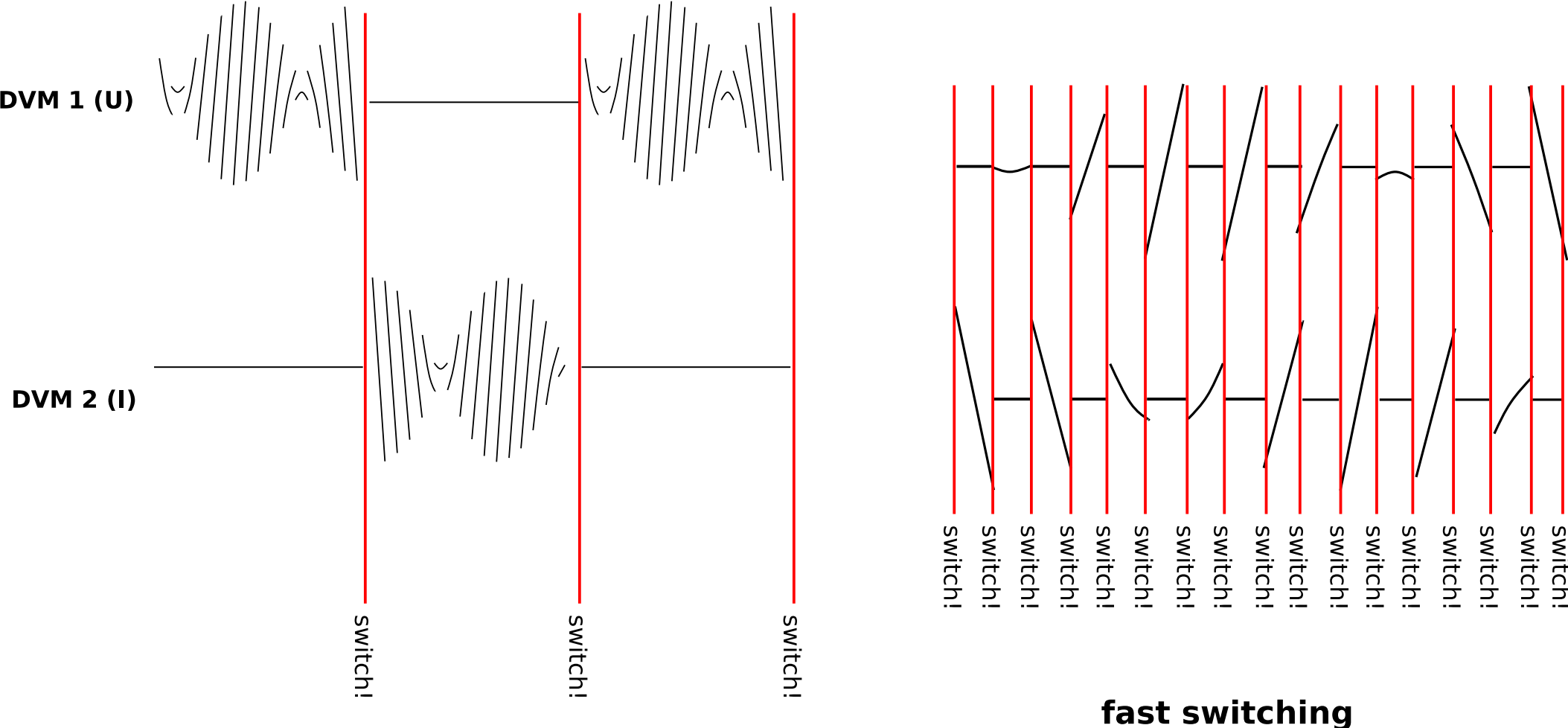**DVM measure waveform, PJVS is used to measure gain of digitizer**

Differential measurements
DVM measure difference between PJVS and U/I signal

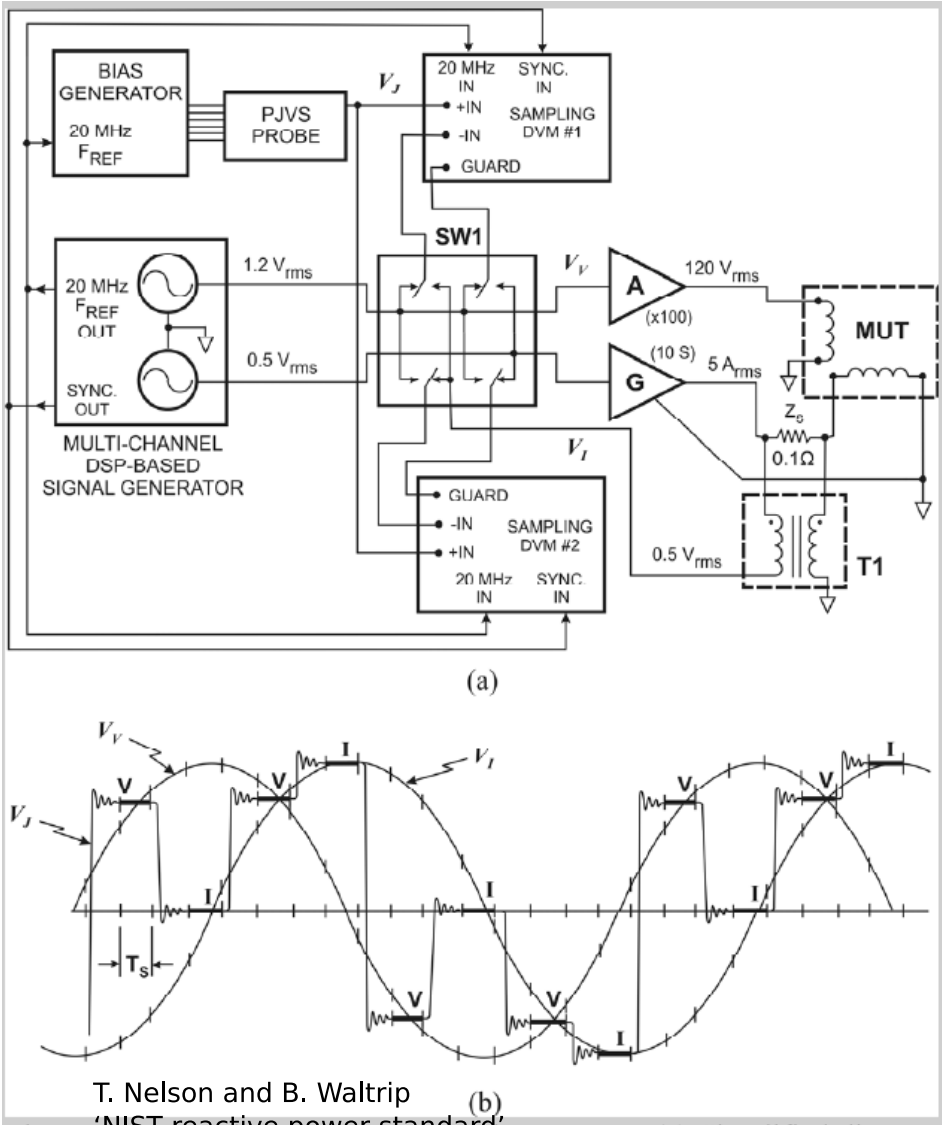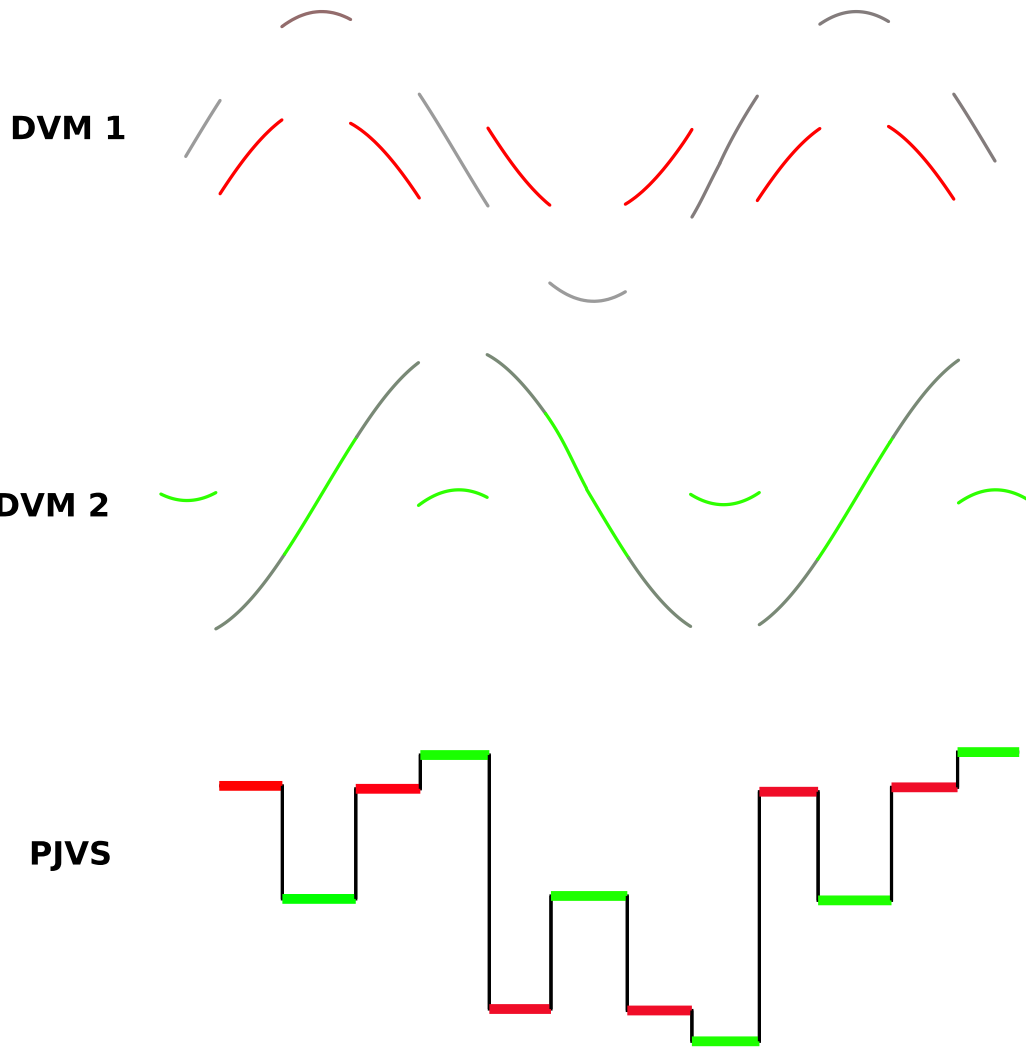**1 PJVS, 1 DVM, PTB method. <33% of U/I waveforms sampled**

DVM 1

12 periods
I channel

switch!

12 periods
I channel

switch!

12 periods
PJVS channel

switch!

Primary AC Power Standard Based on Programmable
Josephson Junction Arrays
Luis Palafox et al.
IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT
VOL. 56, NO. 2, APRIL 2007

1 PJVS, 2 DVM. <50 % of U/I waveforms sampled

DVM 1

U channel

DVM 2

I channel

PJVS channel

PJVS channel

U channel

I channel

switch!

switch!

switch!

1 PJVS, 3 DVM. 100 % of U/I waveforms sampled

DVM 1

U channel

PJVS channel

I channel

DVM 2

I channel

PJVS channel

PJVS channel

DVM 3

I channel

U channel

U channel

switch!

switch!

switch!

1 PJVS, 1 DVM

DVM 1 (U)

DVM 2 (I)

switch!

switch!

switch!

slow switching

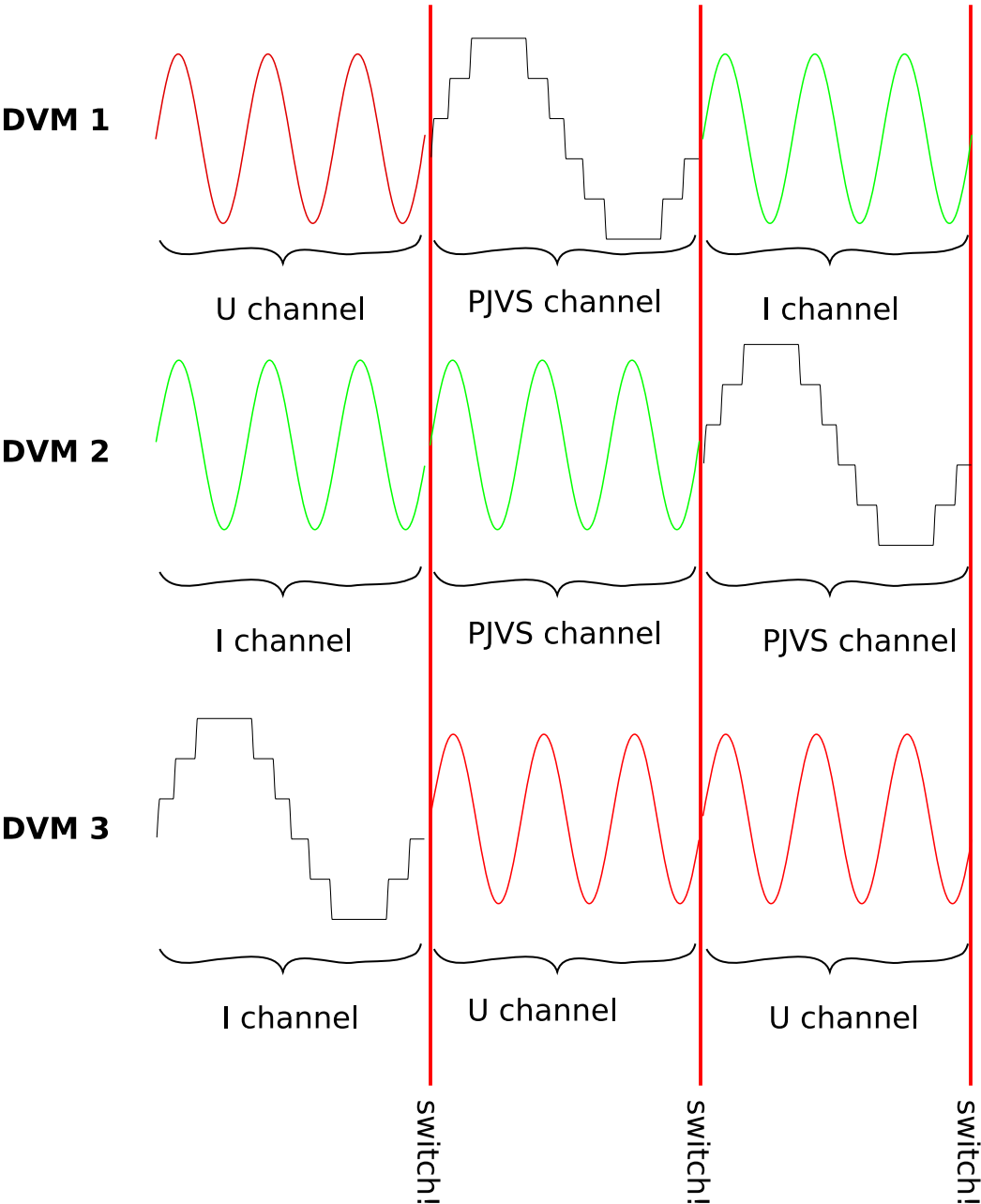switch! (×many)

fast switching
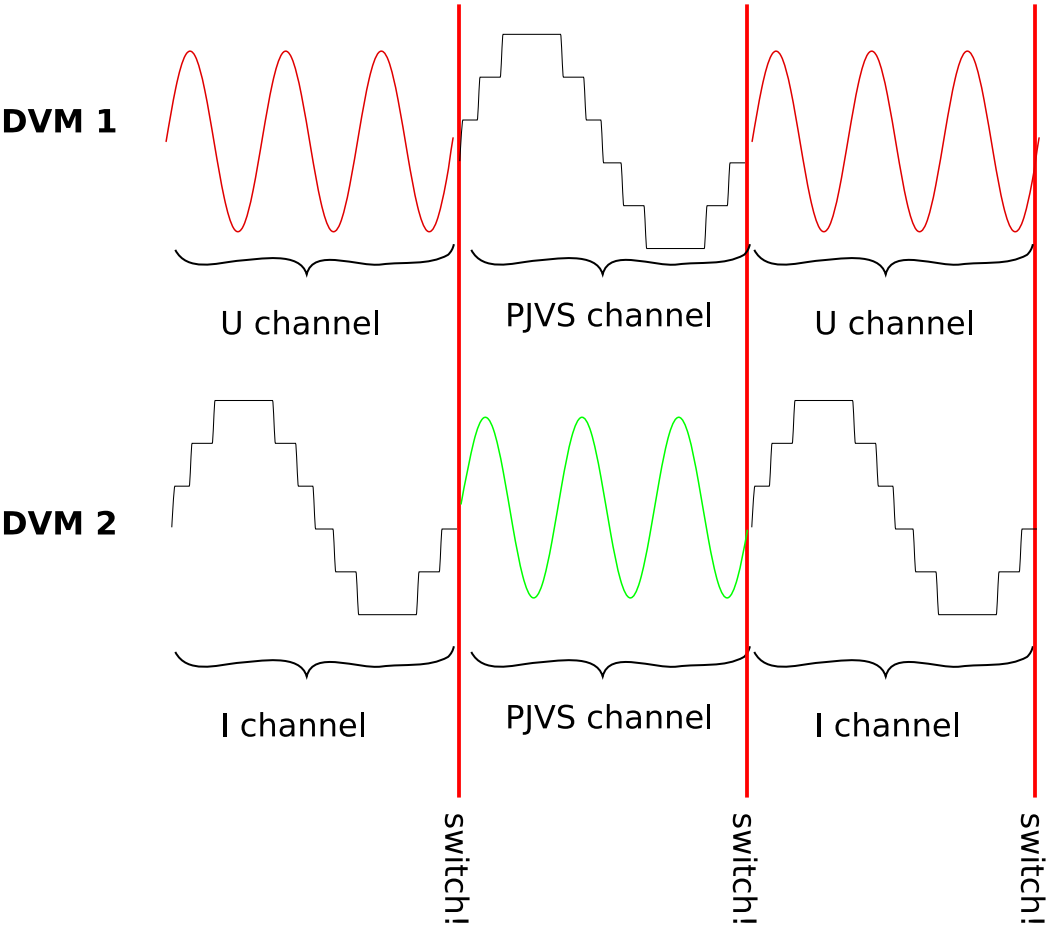
1 PJVS, 2 DVM, NIST method

DVM 1

DVM 2

PJVS

T. Nelson and B. Waltrip
'NIST reactive power standard'
2012 IEEE Power and Energy Society General Meeting, 2012, pp. 1–5.

2 PJVS, 2 DVM

DVM 1

DVM 2

PJVS 1

PJVS 2