

# What is SDI jitter?

## TI Precision Labs – Video Interface

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# SDI jitter defined by SMPTE

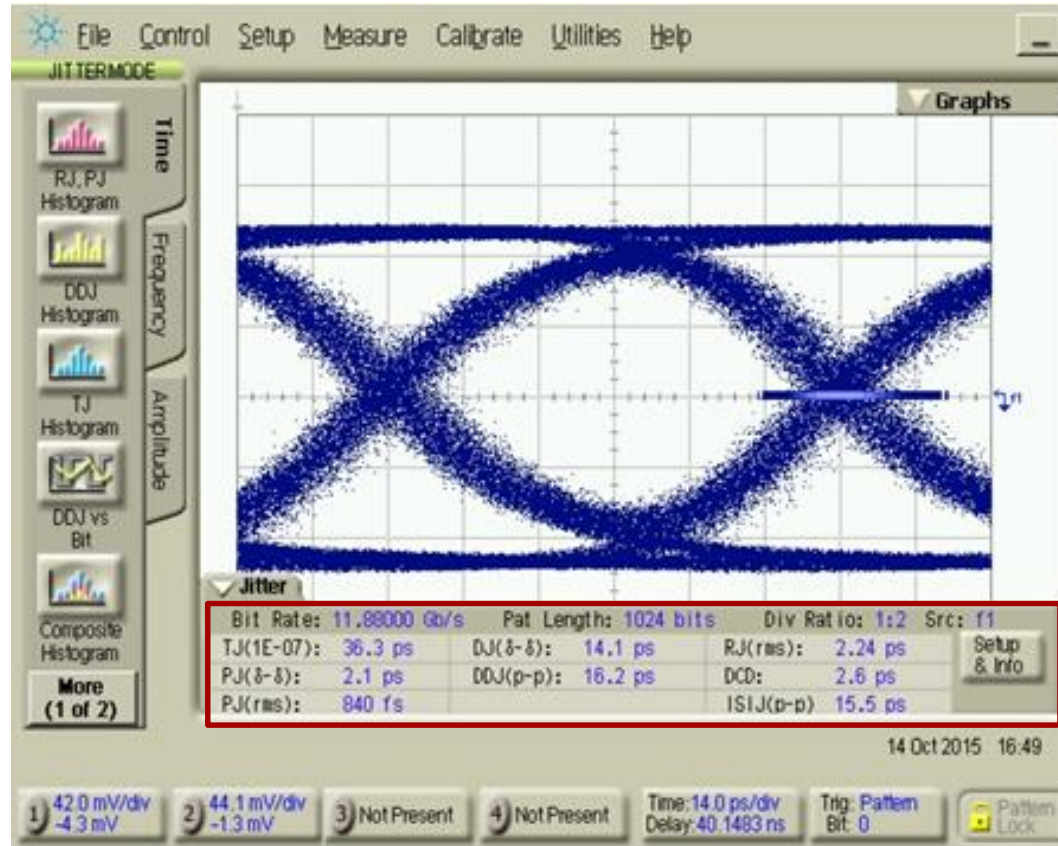


SDI Analyzer

- SMPTE RP 184 applies to:
  - Receiver: jitter tolerance
  - Jitter source: SN65LVDS31
  - alignment, timing, transfer
- SMPTE RP 192 applies to:
  - Methods for measuring these requirement as outlined in SMPTE RP 184

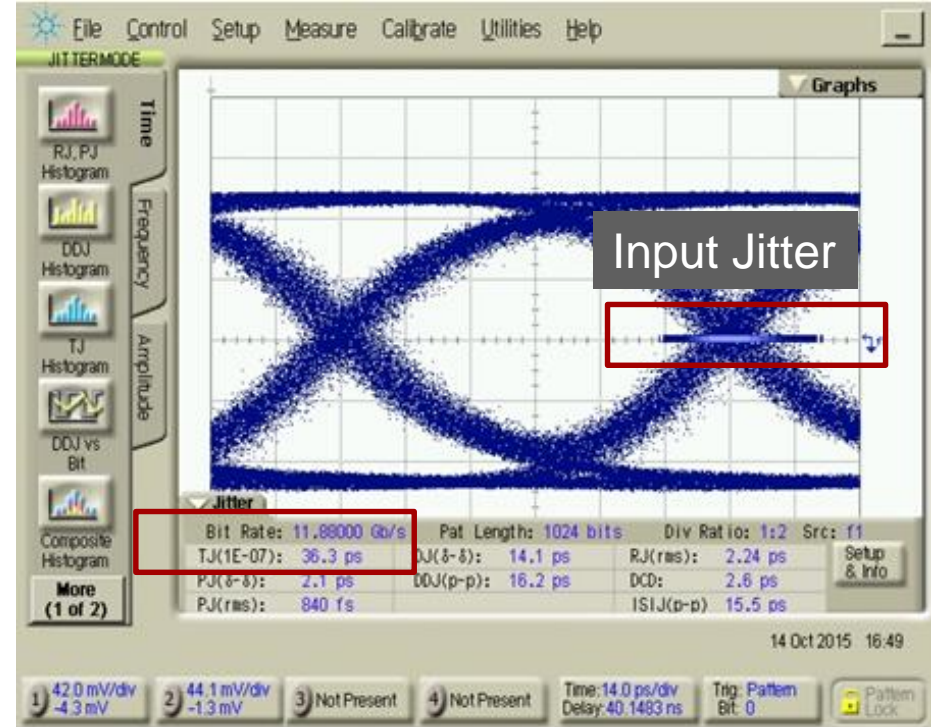
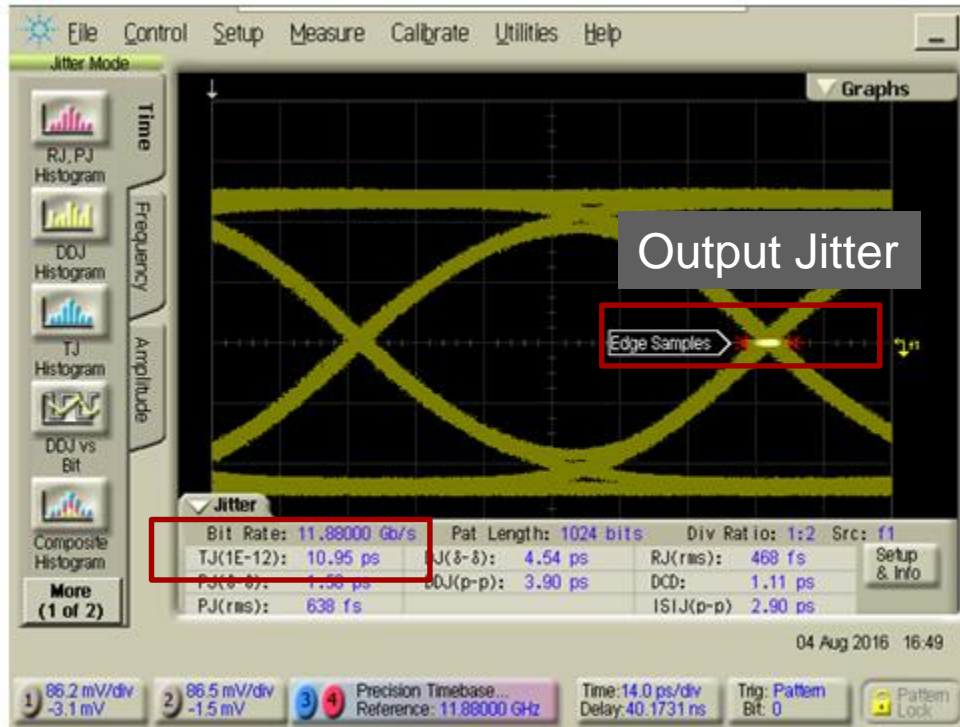
# SMPTE RP 184 jitter tolerance

- Minimum peak to peak amplitude of the sinusoidal jitter that causes bit error



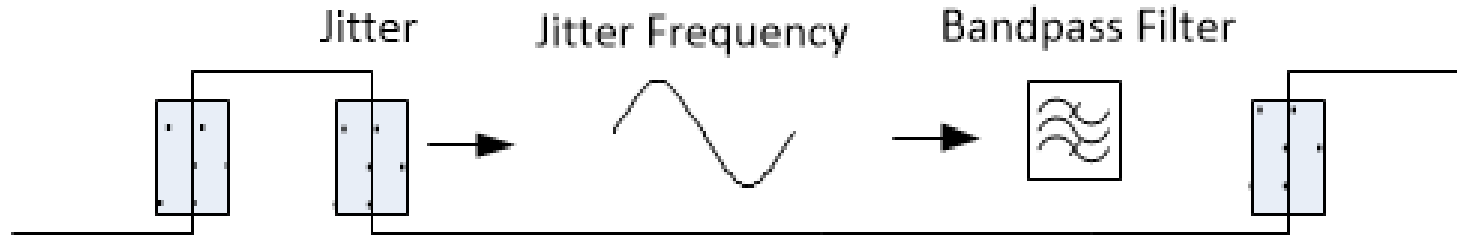
# SMPTE RP 184 jitter transfer

- Normalized output jitter vs input jitter as a function of the frequency

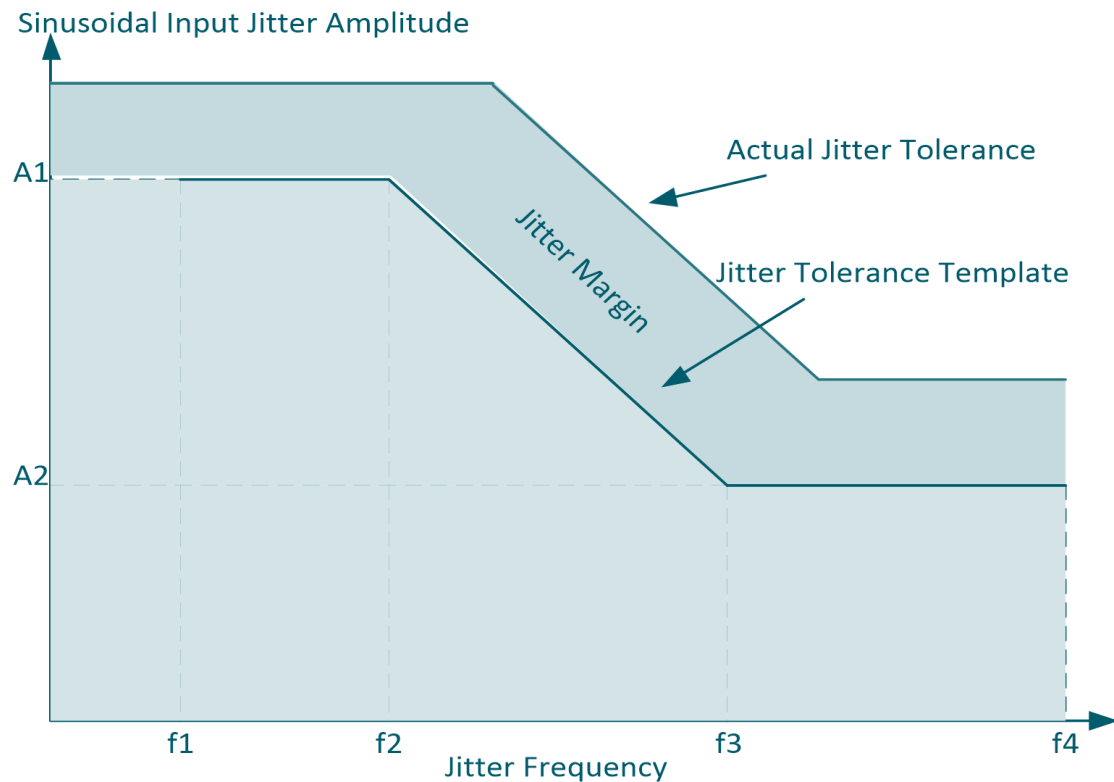


# SMPTE RP 184 alignment / timing jitter

- Variation in position of a signal's transitions over a frequency band relative to the recovered clock

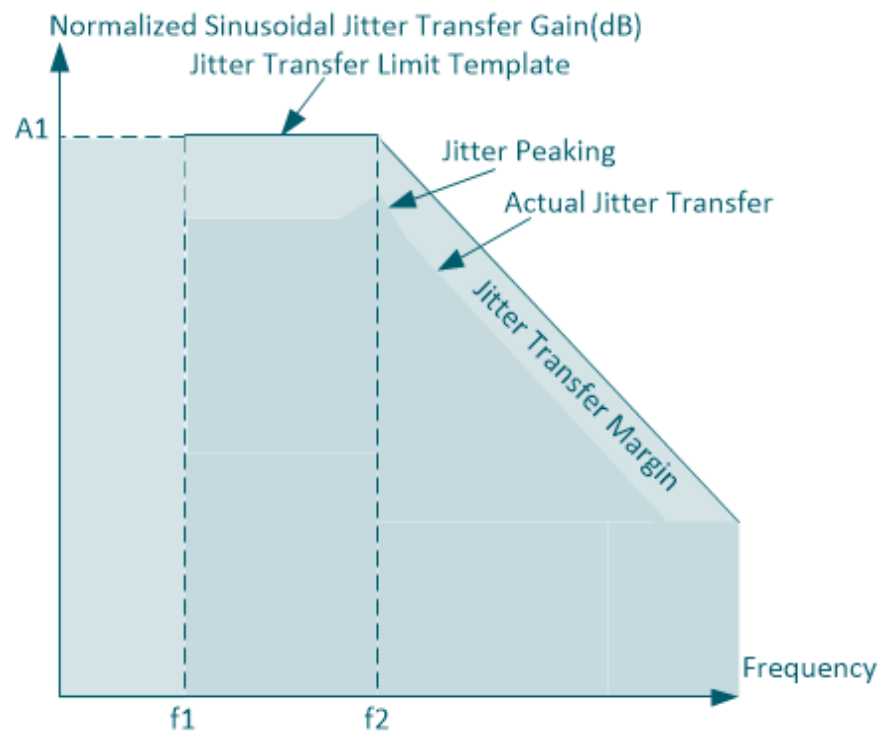


# Input jitter tolerance template



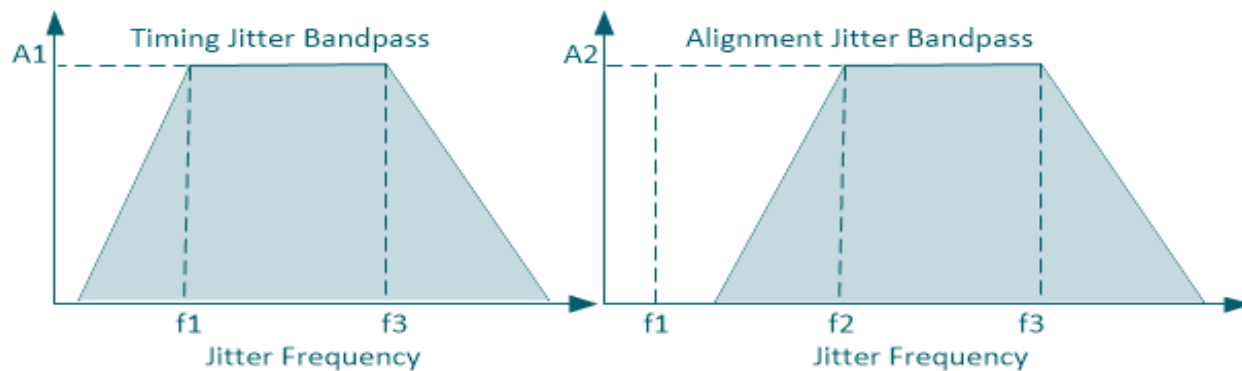
Parameter	Unit	Description
$f_1$	Hz	Low-frequency limit
$f_2$	Hz	$A_1$ Low-frequency jitter tolerance edge
$f_3$	Hz	$A_2$ High-frequency jitter tolerance edge
$f_4$	Hz	High-frequency specification limit
$A_1$	UI	Low-frequency jitter tolerance, $f_1$ to $f_2$
$A_2$	UI	High-frequency jitter tolerance, $f_3$ to $f_4$
Error Criterion		Bit error criterion
Test Signal		Color bar or equivalent

# Jitter transfer



Parameter	Unit	Description
f1	Hz	Low-frequency band edge
f2	Hz	High-frequency band edge
J	dB	Low-frequency normalized jitter
Test Signal		Color bar or equivalent

# Timing and alignment jitter bypass filter



Parameter	Unit	Description
$f_1$	Hz	Timing jitter lower band edge
$f_2$	Hz	Alignment jitter lower band edge
$f_3$	Hz	Timing jitter upper band edge
$f_4$	Hz	Alignment jitter upper band edge
A1	UI	Timing jitter limit
A2	UI	Alignment jitter limit



# Short quiz

- What is intrinsic jitter:
  - Output jitter with 1-m-75-ohm cable, color bar pattern, and no input jitter
  - Output jitter with no input jitter and 1-m-75-ohm cable
- What is jitter transfer:
  - Output jitter at the output of the device
  - Output jitter versus input jitter as a function of the frequency
- Input jitter tolerance is:
  - The minimum peak to peak jitter amplitude that causes bit error
  - Jitter amplitude that causes alignment jitter failure
- What is wander:
  - Jitter frequency below one tenth of the data rate
  - Jitter amplitude below 10Hz



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