# What is SDI jitter?

## TI Precision Labs – Video Interface

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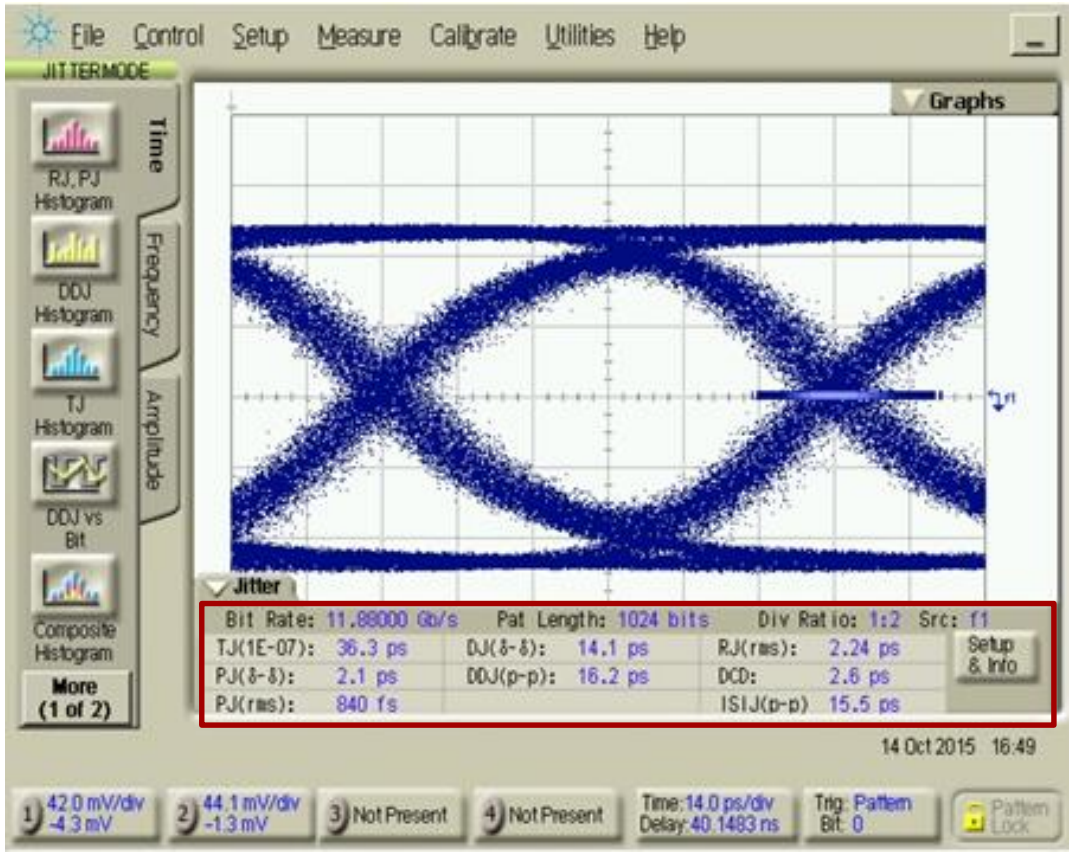
# SDI jitter defined by SMPTE

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

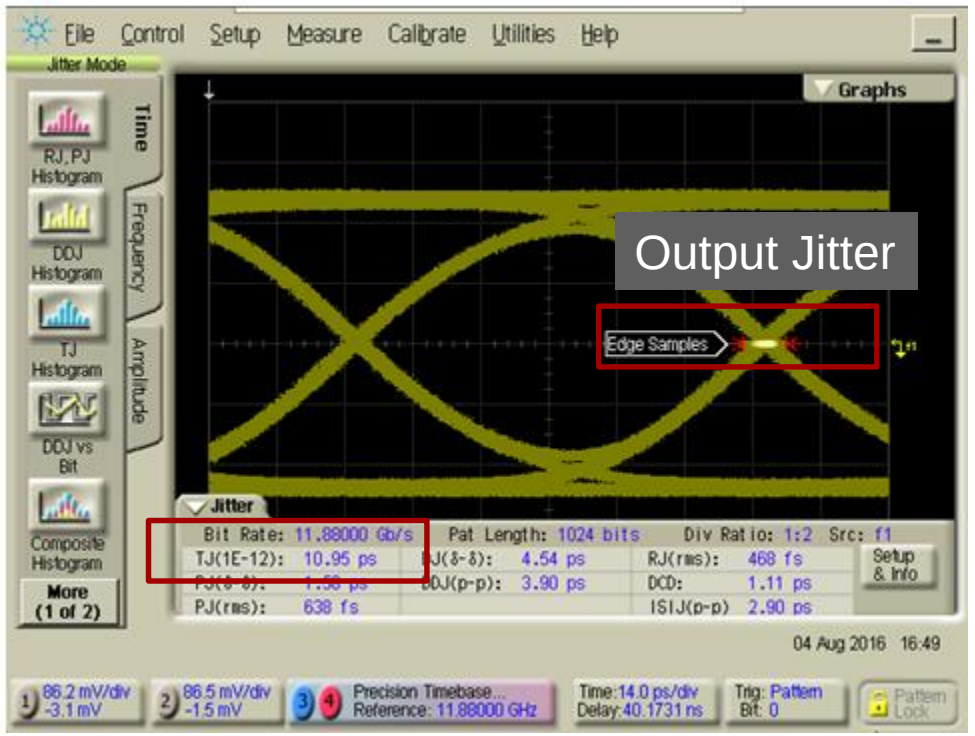
# SMPTE RP 184 jitter tolerance

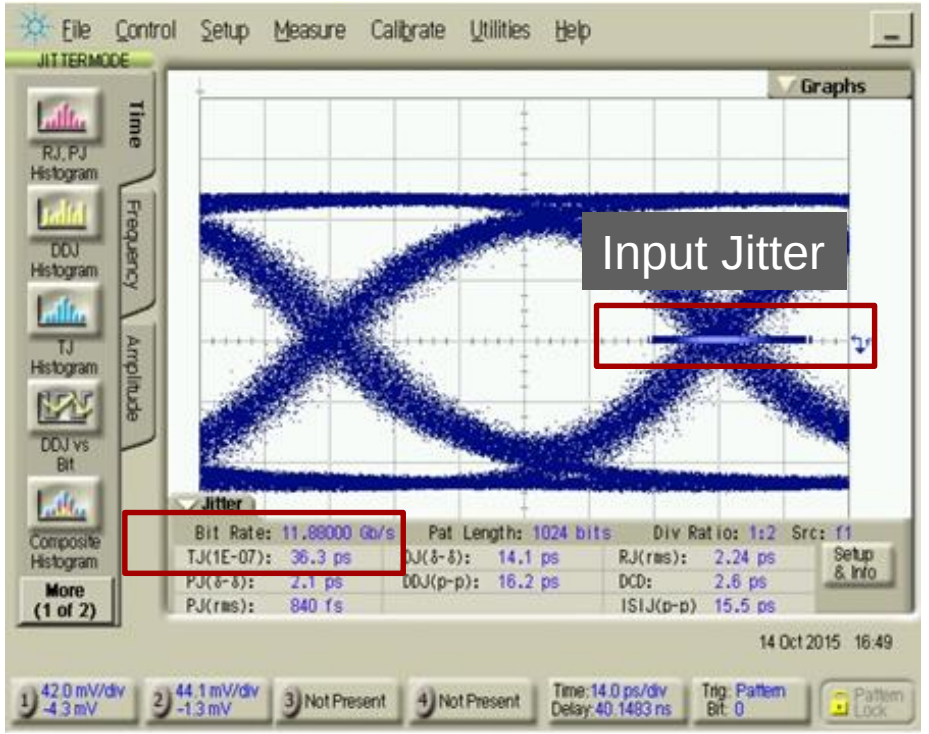
- Minimum peak to peak amplitude of the sinusoidal jitter that causes bit error



# SMPTE RP 184 jitter transfer

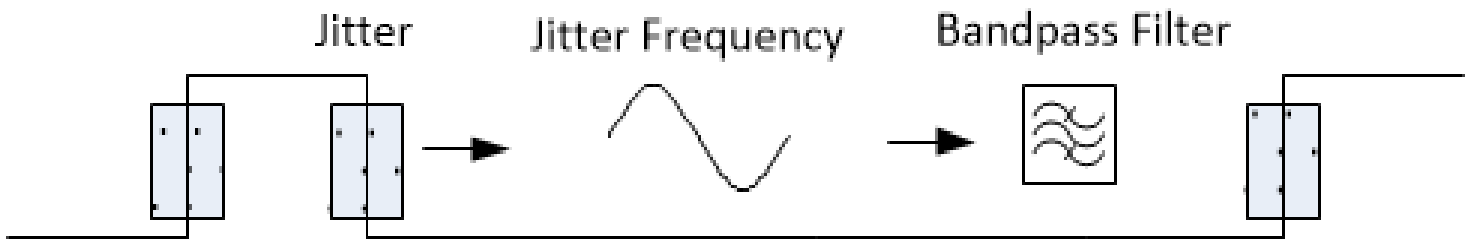
- Normalized output jitter vs input jitter as a function of the frequency



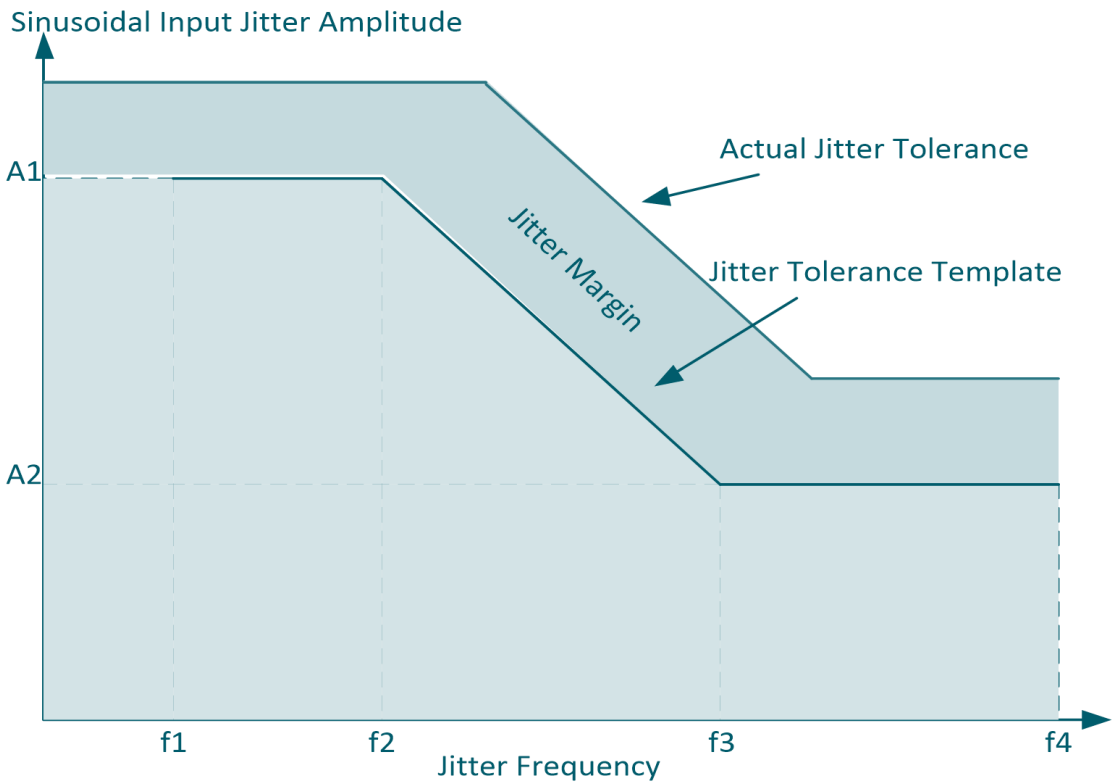



# SMPTE RP 184 alignment / timing jitter

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

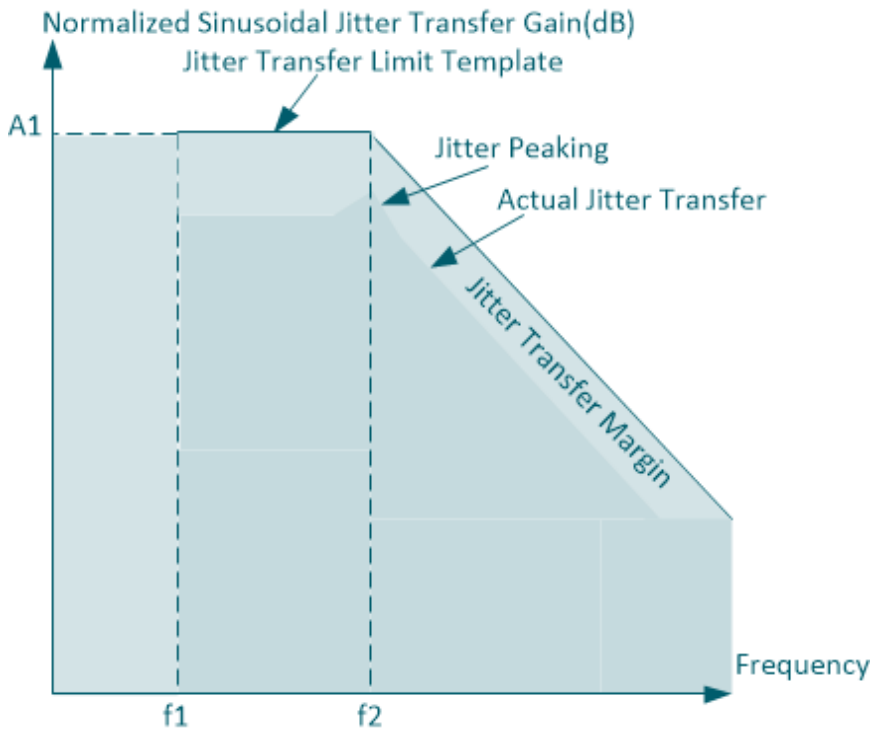


# Input jitter tolerance template



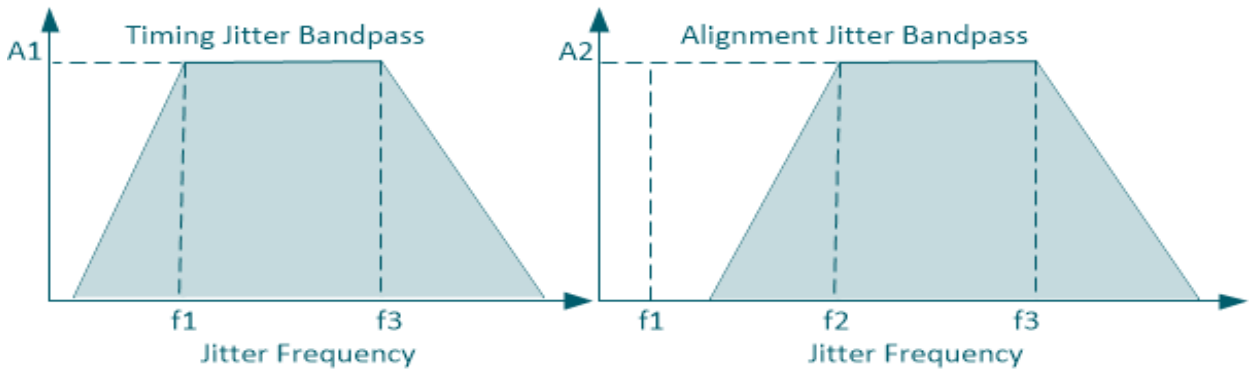

| Parameter | Unit | Description |
|---|---|---|
| f1 | Hz | Low-frequency limit |
| f2 | Hz | A1 Low-frequency jitter tolerance edge |
| f3 | Hz | A2 High-frequency jitter tolerance edge |
| f4 | Hz | High-frequency specification limit |
| A1 | UI | Low-frequency jitter tolerance, f1 to f2 |
| A2 | UI | High-frequency jitter tolerance, f3 to f4 |
| 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 |
|---|---|---|
| f1 | Hz | Timing jitter lower band edge |
| f2 | Hz | Alignment jitter lower band edge |
| f3 | Hz | Timing jitter upper band edge |
| f4 | Hz | Alignment jitter upper band edge |
| A1 | UI | Timing jitter limit |
| A2 | UI | Alignment jitter limit |



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# 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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