

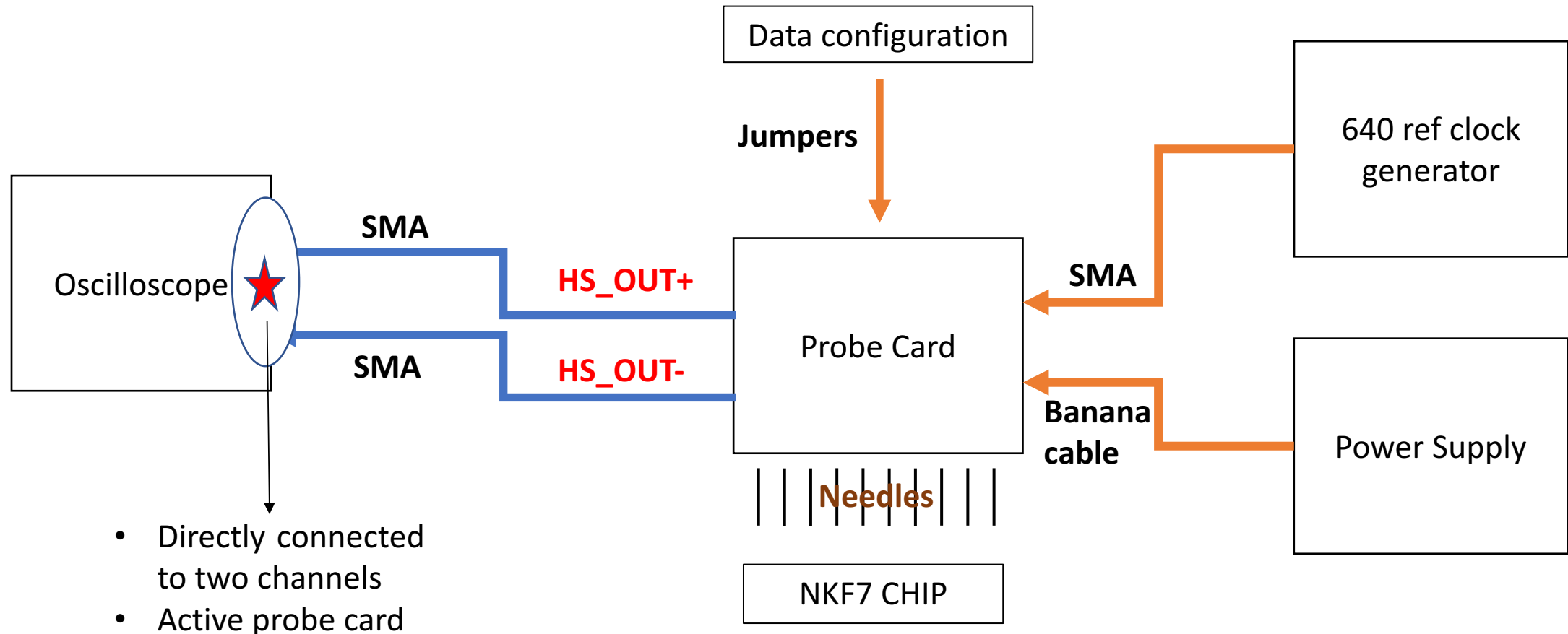


NKF7 VERTICAL PROBE CARD TESTING STATUS

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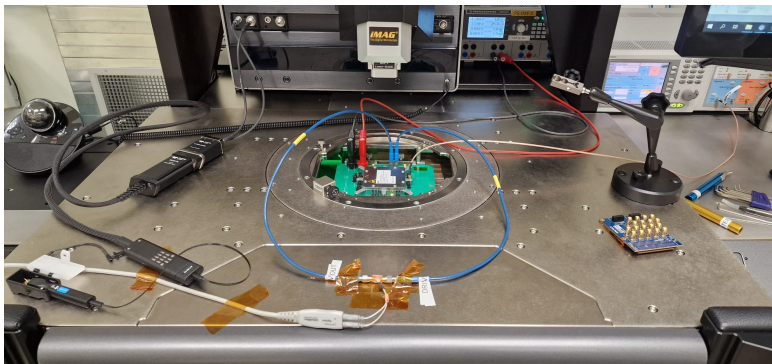
20/02/2025

BLOCK DIAGRAM OF THE SCOPE SETUP



INSTRUMENTATION

- Instrumentation used:
 - **Clock generator:**
 - Keysight 81134A 2 channels 3.35 GHz pulse pattern generator
 - Reference clock 640 MHz
 - **Oscilloscopes:**
 - Agilent DSA91204A Infiniium High Performance Oscilloscope: 12 GHz
 - Probe 1169A 12 GHZ Infinii max probe amp
 - **Power supply**
 - HAMEG HMP4040
 - 1.2-1.6 V and ~20 mA



Terminations used

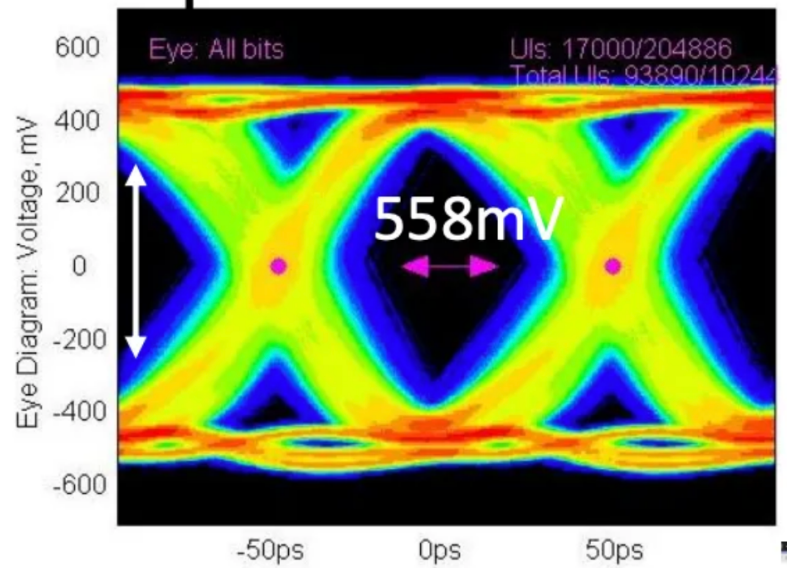


Probe connected to SMA (PROBE)



Probe connected to SMA with 100 ohms in between P and N of output (PROBE + 100 ohms)

10 Gbps FIXED PATTERN @ 1.4 V PROBE + 100 OHMS

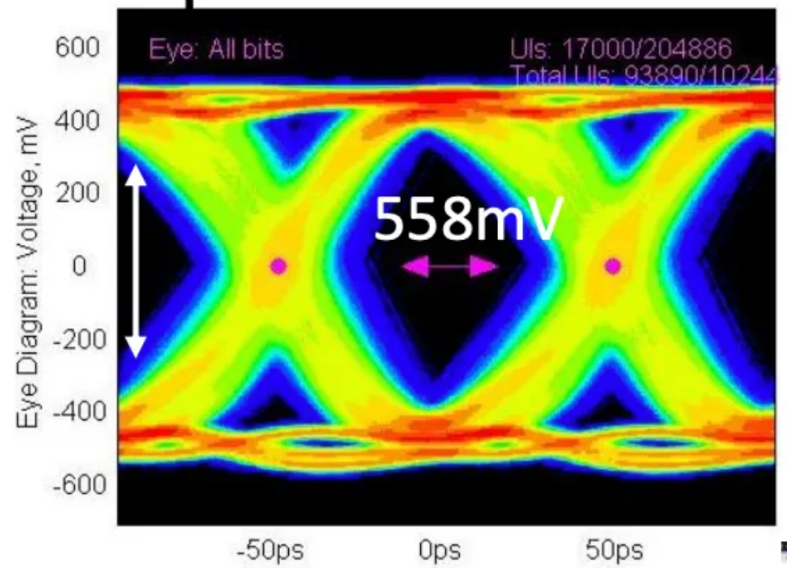


- Marcel reference of eye diagram
 - 4h'B8B2 for eye-diagram
- VP Fixed pattern set to: 4h'5555
- 10.28 Gbps signal
 - Frequency 5.12 GHz

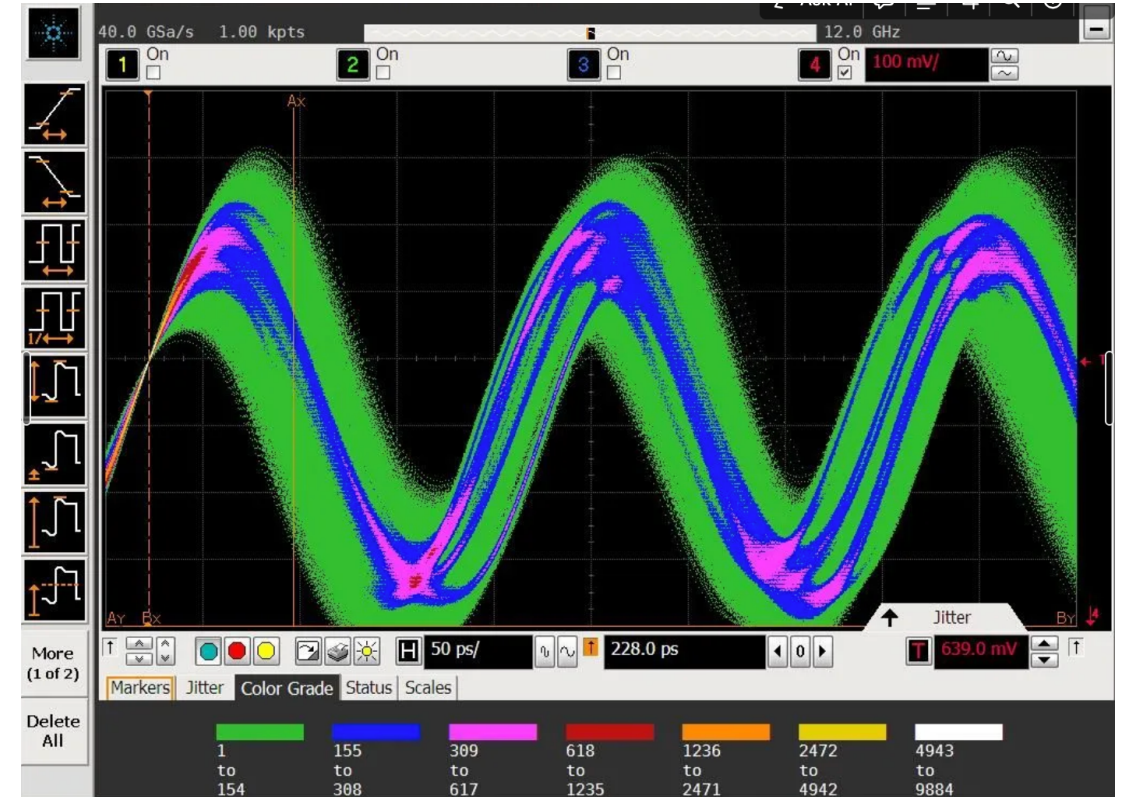


- ~150 mV amplitude (wrong termination)
- Eye width/jitter of > 80 ps

10 Gbps FIXED PATTERN @ 1.4 V PROBE ONLY

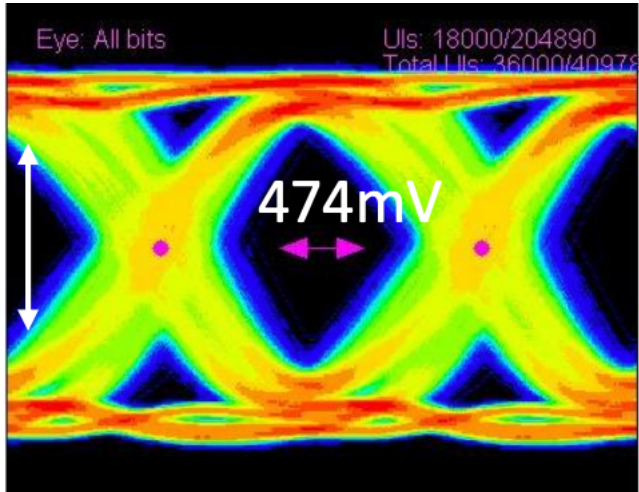


- Marcel reference of eye diagram
 - 4h'B8B2 for eye-diagram
- VP Fixed pattern set to: 4h'5555
- 10.28 Gbps signal
 - Frequency 5.12 GHz

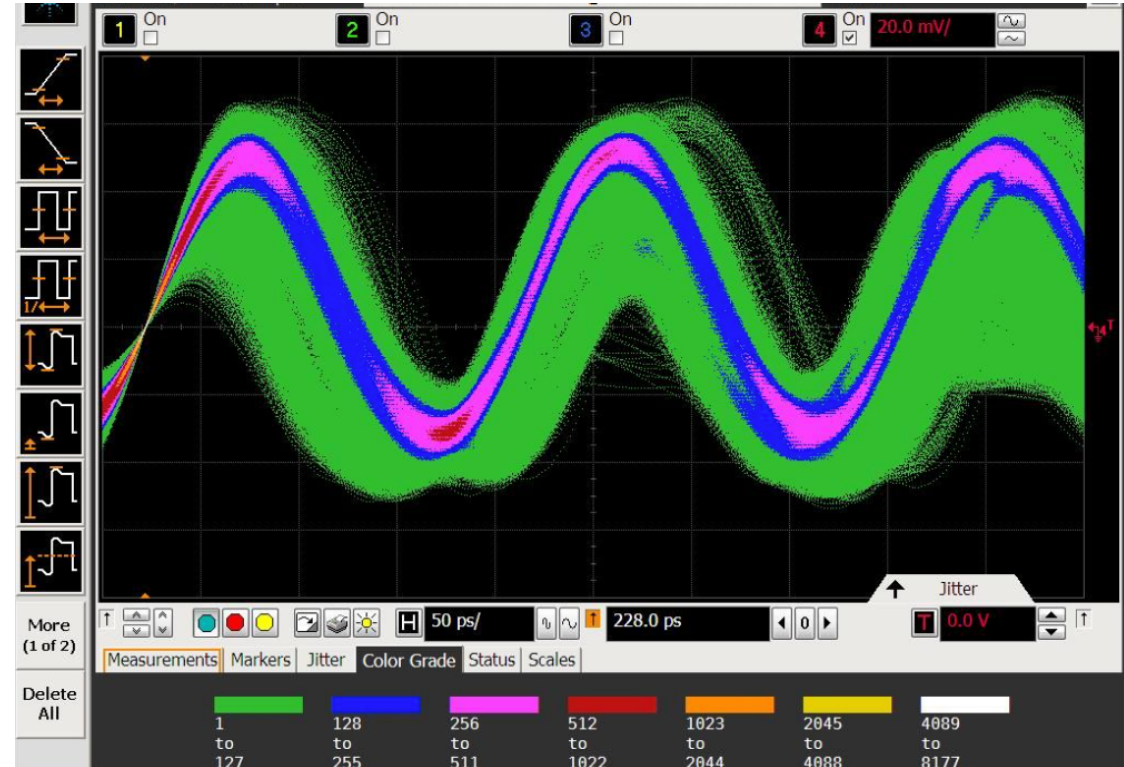


- > 700 mV amplitude
- Eye width/jitter of > 80 ps

10 Gbps FIXED PATTERN @ 1.3 V PROBE + 100 OHMS

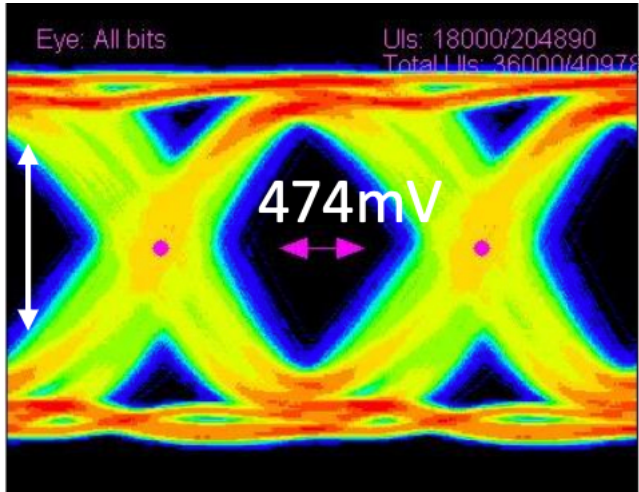


- Marcel reference of eye diagram
 - 4h'B8B2 for eye-diagram
- VP Fixed pattern set to: 4h'5555
- 10.28 Gbps signal
 - Frequency 5.12 GHz

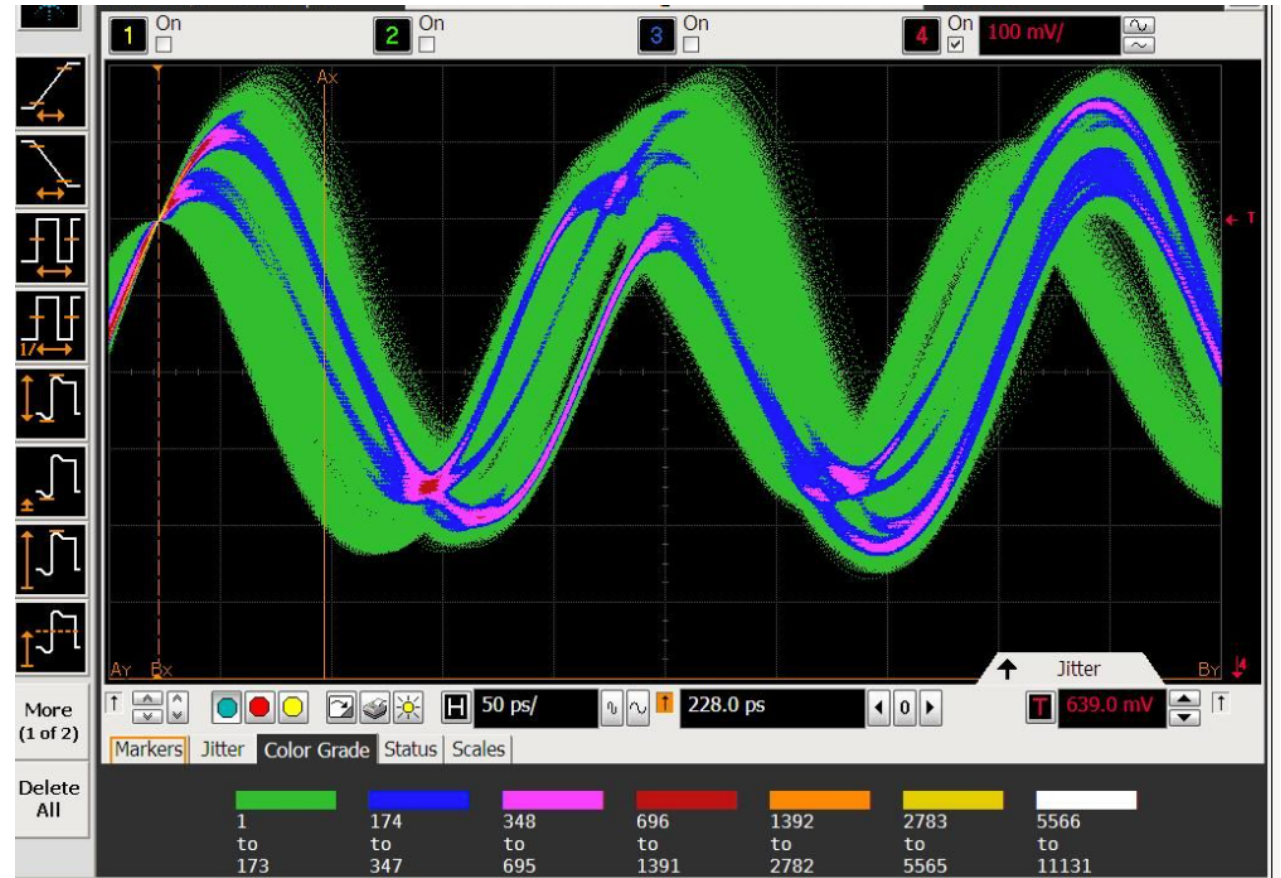


- > 120 mV amplitude (wrong termination)
- Eye width/jitter of > 80 ps

10 Gbps FIXED PATTERN @ 1.3 V PROBE ONLY

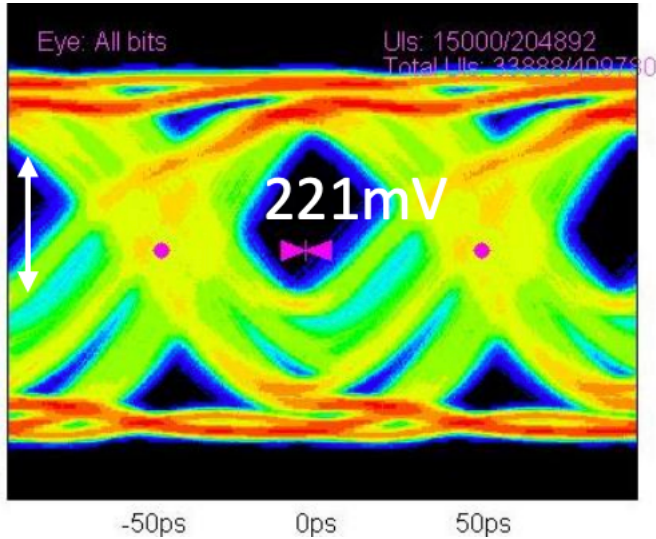


- Marcel reference of eye diagram
 - 4h'B8B2 for eye-diagram
- VP Fixed pattern set to: 4h'5555
- 10.28 Gbps signal
 - Frequency 5.12 GHz

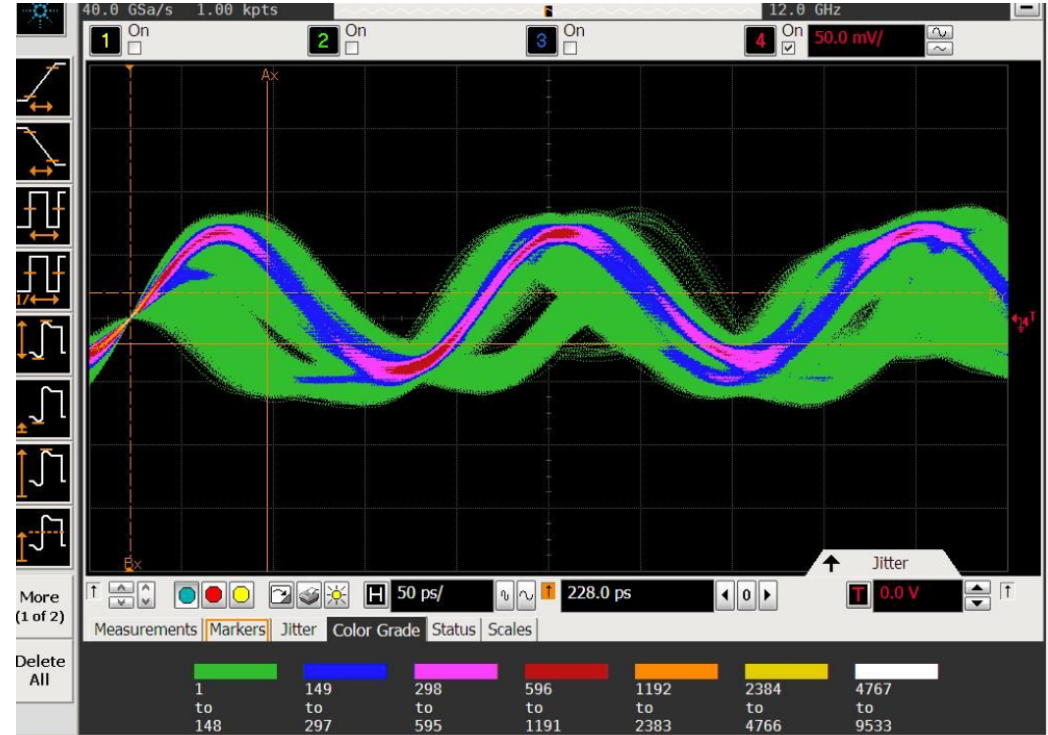


- > 650 mV amplitude
- Eye width/jitter of > 80 ps

10 Gbps FIXED PATTERN @ 1.2 V PROBE + 100 OHMS

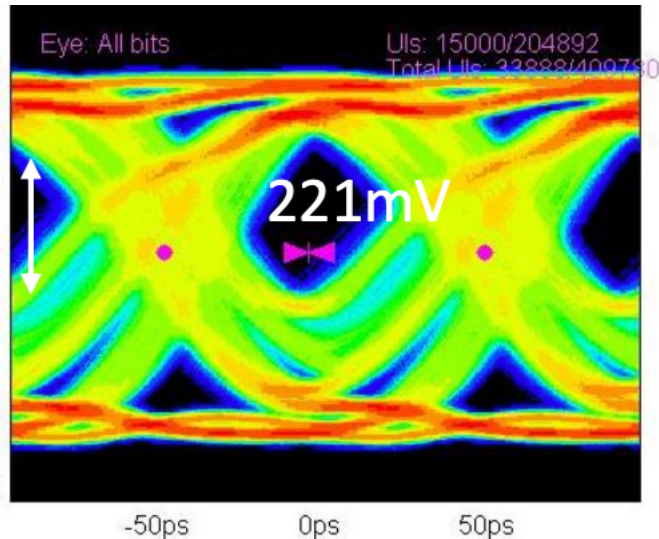


- Marcel reference of eye diagram
 - 4h'B8B2 for eye-diagram
- VP Fixed pattern set to: 4h'5555
- 10.28 Gbps signal
 - Frequency 5.12 GHz

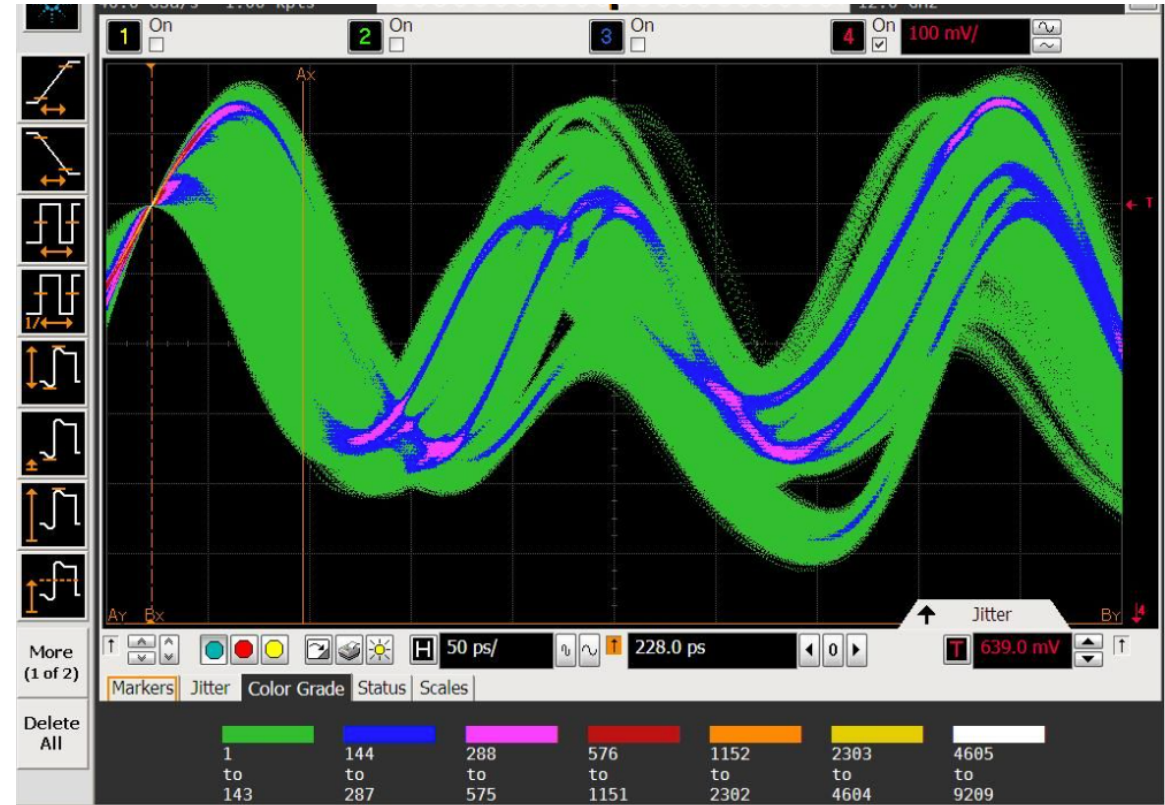


- > 120 mV amplitude (wrong termination)
- Eye width/jitter of > 20 ps

10 Gbps FIXED PATTERN @ 1.2 V PROBE ONLY

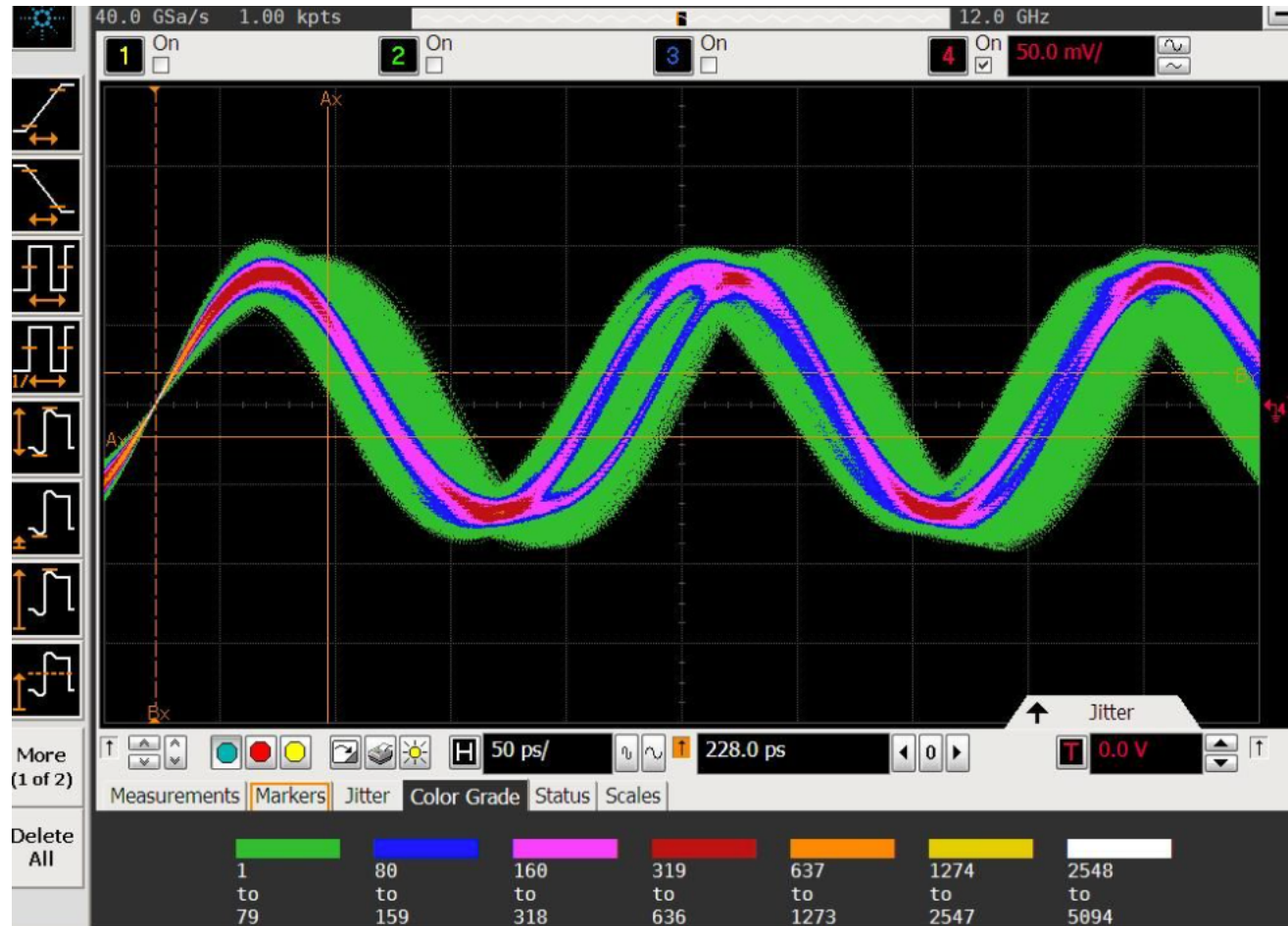


- Marcel reference of eye diagram
 - 4h'B8B2 for eye-diagram
- VP Fixed pattern set to: 4h'5555
- 10.28 Gbps signal
 - Frequency 5.12 GHz

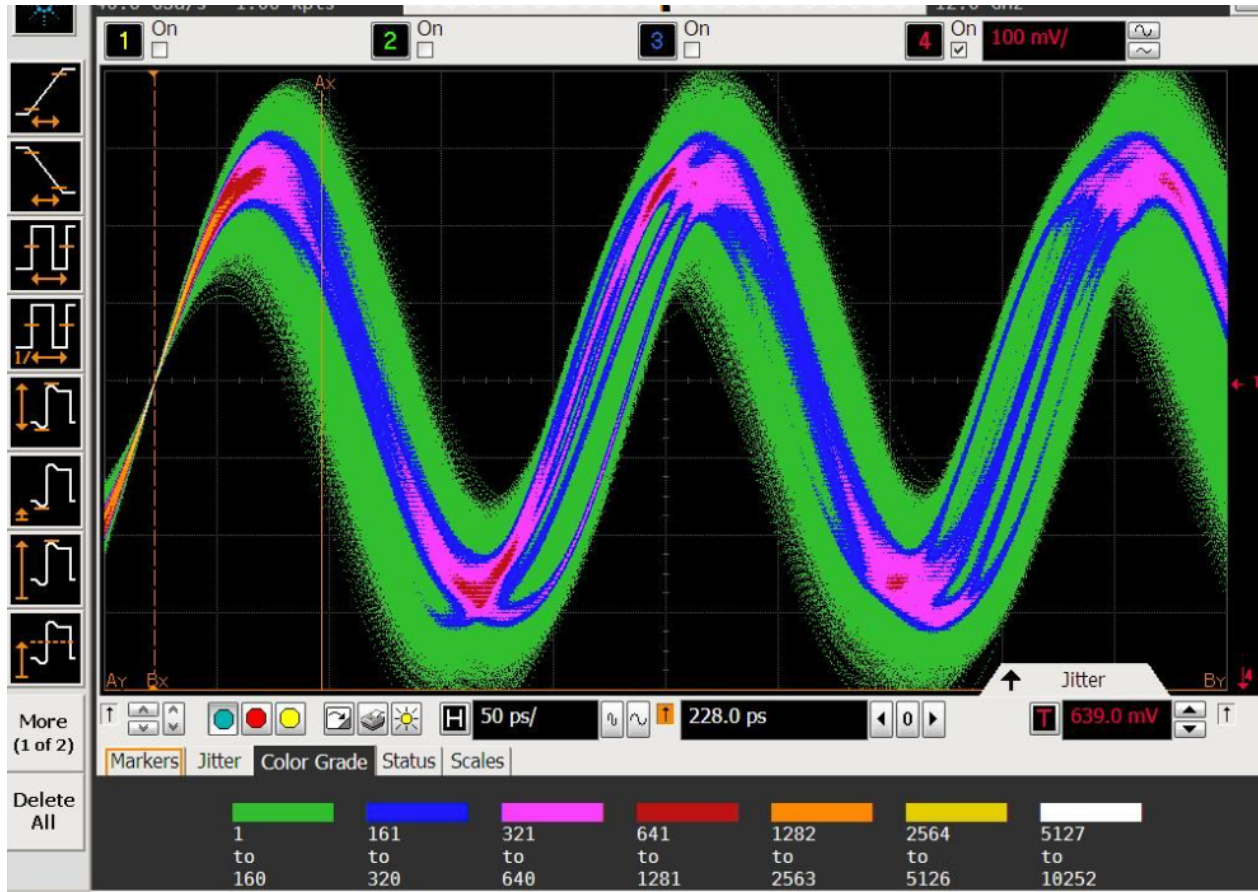


- > 600 mV amplitude
- Eye width/jitter of > 50 ps

10 Gbps FIXED PATTERN @ 1.5 V PROBE + 100 OHMS

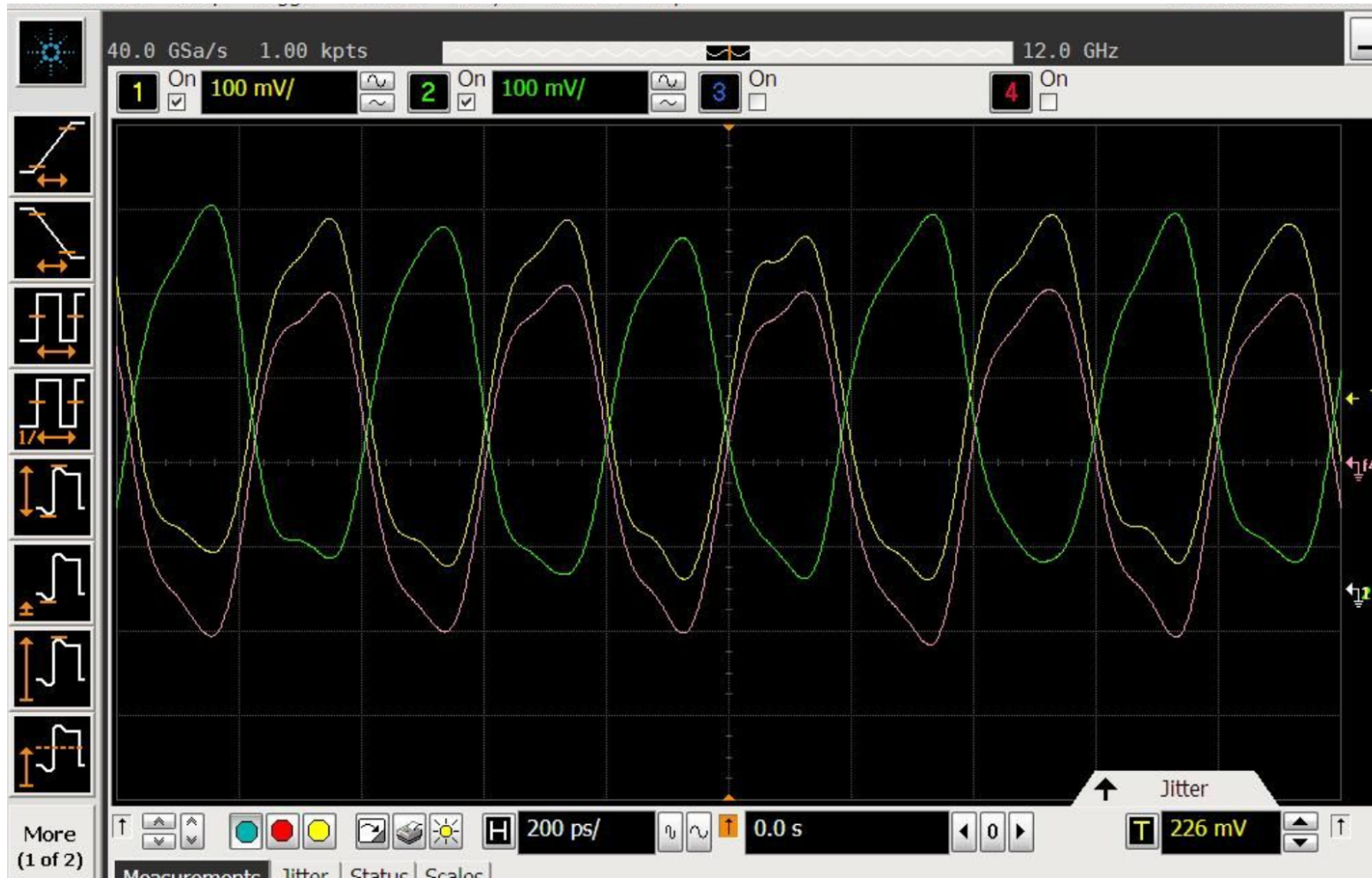


10 Gbps FIXED PATTERN @ 1.5 V PROBE ONLY



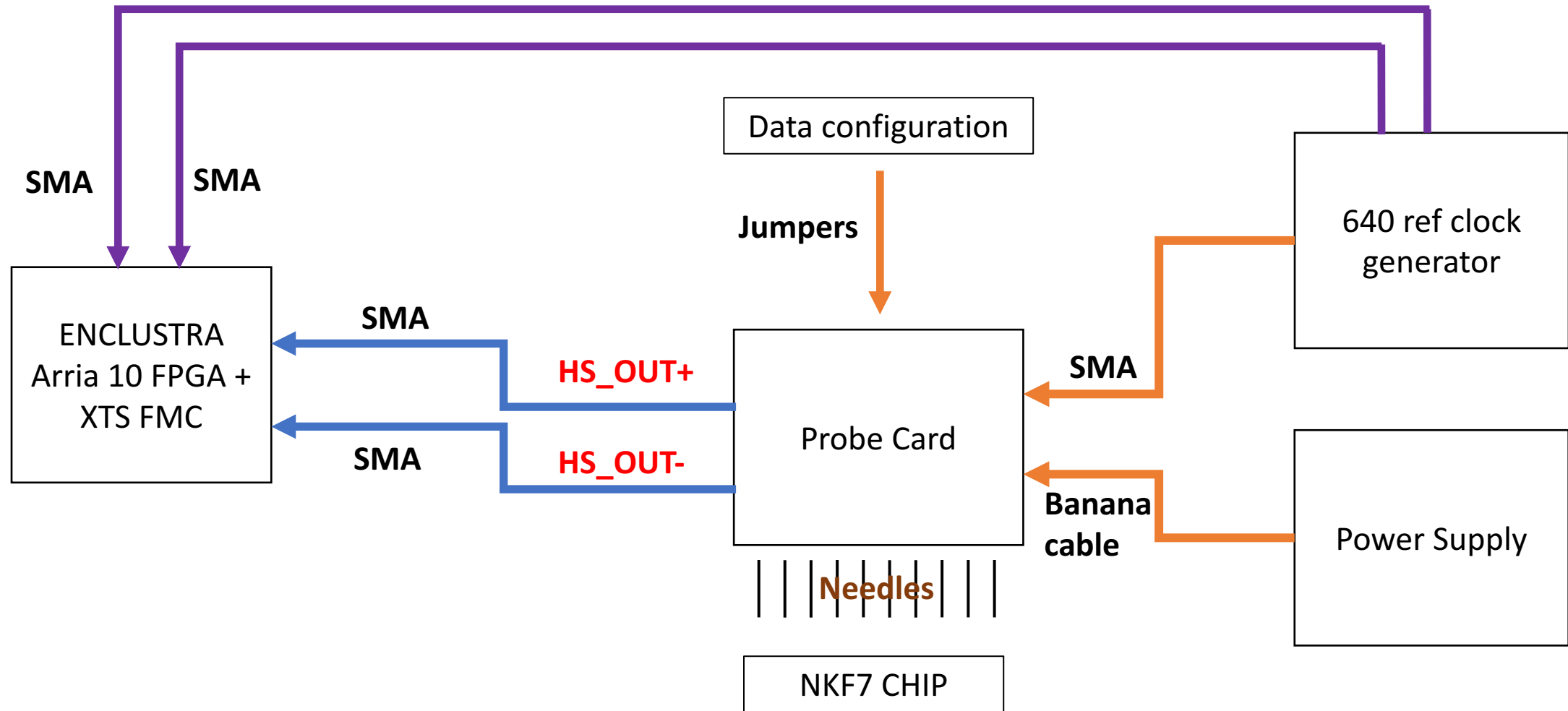
- VP Fixed pattern set to: 4h'5555
- 10.28 Gbps signal
 - Frequency 5.12 GHz
- ~800 mV amplitude
- Eye width/jitter of > 85 ps

5 Gbps FIXED PATTERN @ 1.5 V 1m SMA CABLE



- VP Fixed pattern set to: 4h'5555
- 5.12Gbps signal
 - Frequency 2.56 GHz
- ~400 mV amplitude for P and N

BLOCK DIAGRAM OF FPGA SETUP



BLOCK DIAGRAM OF FPGA SETUP

- Fixed pattern set to: 4h'2AAB to make simpler to align the FPGA data
- Used Arria 10 GBT
- Implemented counter that stores the amount of clock cycles before and error is received
- Run for 10 hours at 1.58V error free for die 17
- Repeated at 1.4V error free for the same die

