Supporting document for Comment 109, for D0.2.

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The wording and figures below are preliminary, and more detail may be required, but they should allow getting the basic specs and measurements concepts into the document so review can begin.

Specifications (for Table 68-4)

TP2 and dispersion penalty	max	5 dB
Overshoot	max	0.4 OMA

Methods (for subclause 68.6.4)

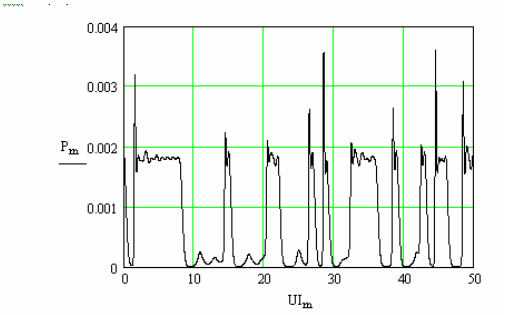
The TP2 and dispersion penalty is intended to control deterministic dispersion. A waveform from TP2 of the DUT is to be captured on an oscilloscope for analysis to determine if its performance, when operating in conjunction with fibers expected in the application, is within acceptable penalty bounds.

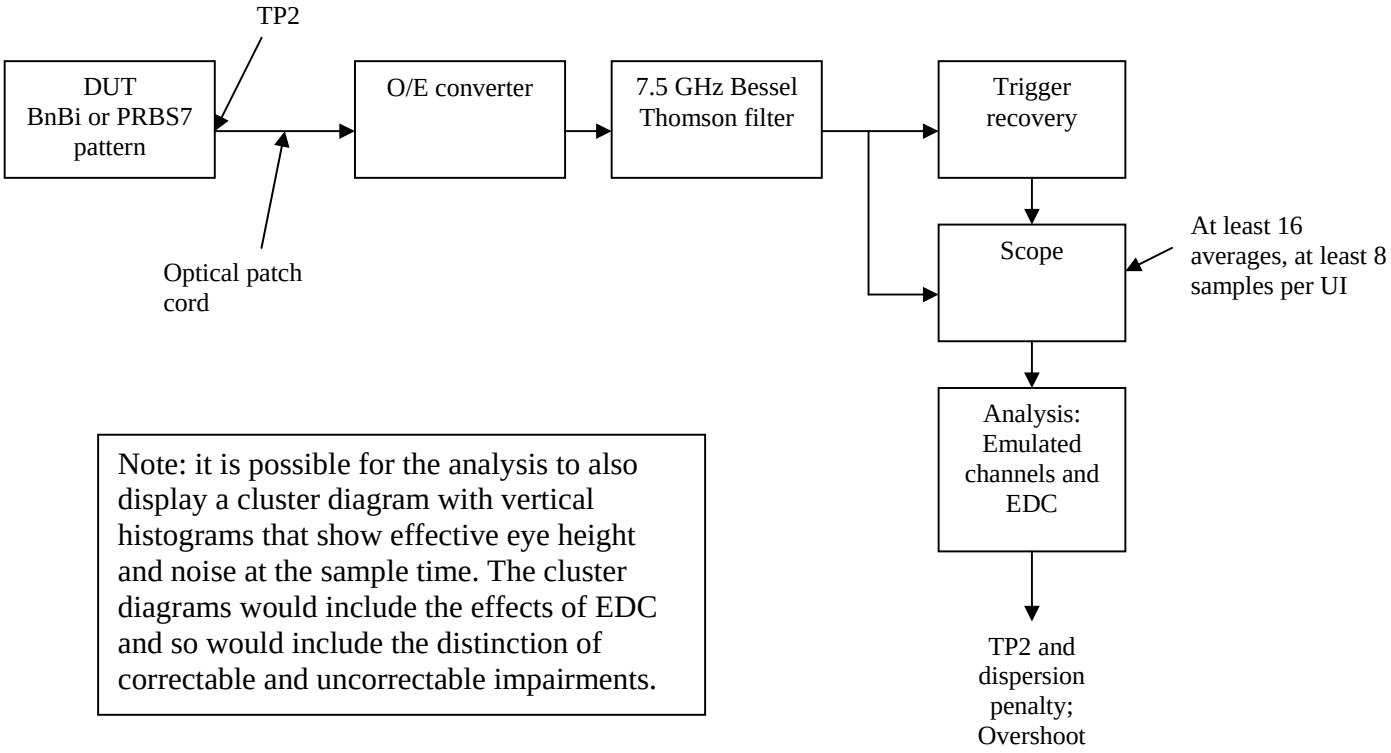
The DUT shall repetitively transmit the BnBi data pattern, as defined in clause 52 [subclause], or a PRBS7 data pattern through a test patchcord into an O/E converter and through a 7.5 GHz Bessel Thomson filter. The filter output data should then run into the oscilloscope and also into a trigger recovery circuit. The trigger recovery circuit must recover a suitable pattern and/or clock trigger for the scope so that the waveform can be captured and stored. Averaging of at least 16 waveforms, or equivalent, is required. An effective sample rate of at least 8 samples per unit interval is required. If the BnBi pattern is transmitted, then the specific sub-pattern [TBD] is to be recorded. If PRBS7 is used, then the entire pattern is to be recorded. The DUT must be fully operational in both transmit and receive directions during this test.

The stored waveform is to be analyzed in combination with emulated fibers and an emulated reference EDC circuit. The emulated fibers shall be identical to the ISI generators used in the TP3 Static Stressed Receiver Sensitivity Test [TBD] as described in subclause 68.6.5.1, except that they are emulated as MATLAB software models in this test. The reference EDC emulator is defined as [TBD, MATLAB, but based on PIE-D or equivalent].

The waveform is also measured for overshoot at both logic levels. Overshoot is evaluated at the output of the filter, before the effects of channel or ref receiver emulation.

Test figure (for subclause 68.6.4)





Note: it is possible for the analysis to also display a cluster diagram with vertical histograms that show effective eye height and noise at the sample time. The cluster diagrams would include the effects of EDC and so would include the distinction of correctable and uncorrectable impairments.

Specifications (for Table 68-4)

Optical SNR (OMA/rms)	min	37.3
Jitter (rms)	max	0.033

[Note – we may need rms and/or pk-pk limits for these, TBD]

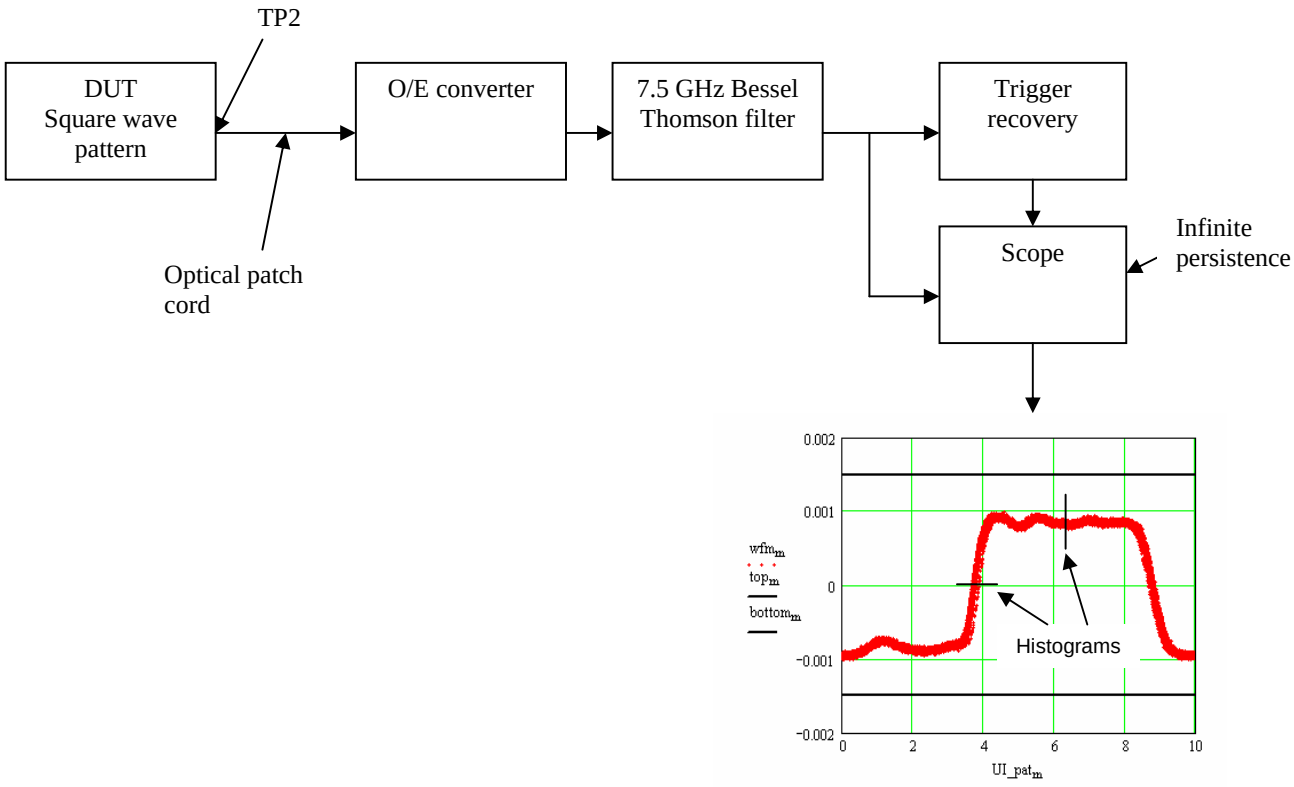
Methods (for subclause 68.6.4)

The optical SNR and jitter measurements are intended to control uncorrelated noise and jitter.

The DUT shall repetitively transmit the low frequency square pattern, as defined in clause 59 [subclause], through a test patchcord into an O/E converter and through a 7.5 GHz Bessel Thomson filter. The filter output data should then run into the oscilloscope and also into a trigger recovery circuit. The trigger recovery circuit must recover a suitable pattern and/or clock trigger for the scope so that the waveform can be displayed. The scope should be run in infinite persistence mode. The DUT must be fully operational in both transmit and receive directions during this test.

A vertical histogram with width of 0.01 UI is used to measure amplitude noise. It should be approximately centered in the upper portion of the square wave. A horizontal histogram with width of ~0.01 OMA is used to measure jitter. It should be placed approximately at the average amplitude value of the square wave. At least 1000 hits are required in each histogram. Compensation for measurement equipment noise and jitter is allowed [explain]. Note that these methods are similar to those used to calibrate the amplitude and jitter used in the Static Stress Receiver Sensitivity Test for TP3 [note to editor – perhaps they can be combined into one piece of text].

Test figure (for subclause 68.6.4)



End of comment.