Tektronix

TDS3000B Troubleshooting Tips

Check the Quality of a Communications Signal

Use the TDS3000B Series' pass/fail mask testing capabilities

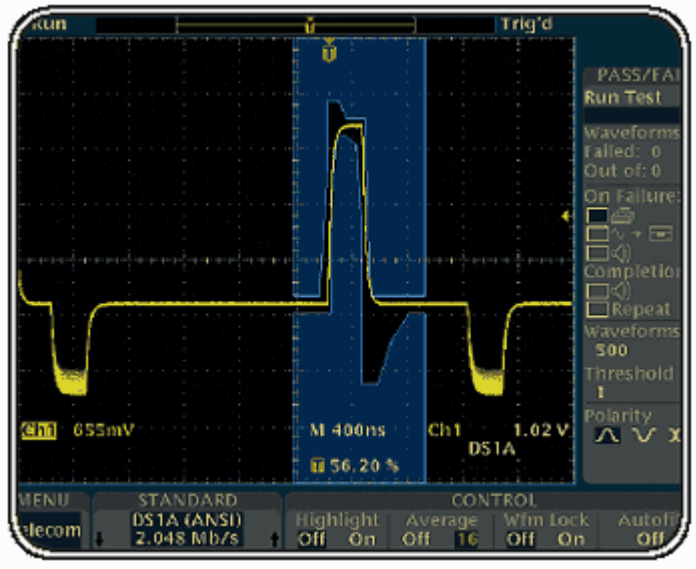
Communications engineers and technicians must test the quality, or performance, of a communications signal. Intense time-to-market pressures require that they do so quickly and efficiently. The TDS3000B Series, with its mask testing capability, constellation diagrams and eye diagrams, is an ideal tool for these developers.

Manufacturing engineers in a telecommunications environment may need to compare the actual performance of equipment on the production line with "masks" of telecommunications standards. The TDS3000B Series' mask testing capabilities make this oscilloscope an ideal test tool for these manufacturing engineers.

To use the TDS3000B Series' pass/fail mask testing capabilities:

1. Press the **QUICKMENU** front panel button.
2. Press the **MENU** bottom menu button to display **TELECOM**.
3. Press the two **STANDARD** buttons to select and display a mask.
4. Press **AUTOSET** to position the waveform in the mask and adjust the gain and position settings as necessary.
5. Press the bottom and side menu buttons to set test and pass/fail parameters.
6. Press the **RUN TEST** side button to run pass/fail testing.

Requires TDS3TMT telecommunications mask testing module.



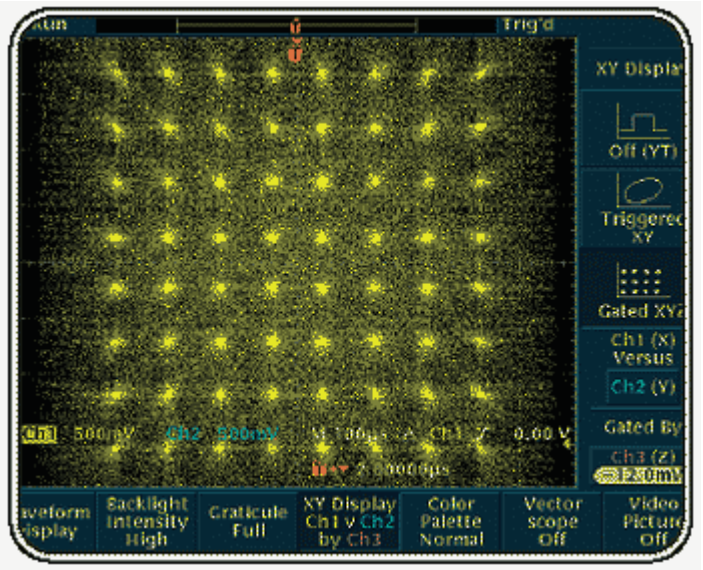
Obtain a constellation diagram using the TDS3000B Series oscilloscope

Some communications signals are encoded in a Quadrature Amplitude Modulation (QAM) format. To test

the distortion of such a signal, engineers can use the TDS3000B Series to generate a constellation diagram and analyze the clarity of the signal's amplitude and phase at discrete times in the diagram.

To obtain a constellation diagram using the TDS3000B Series oscilloscope:

1. Connect the three signals to the oscilloscope using proper probe techniques.
2. Press the front panel **DISPLAY** button.
3. Press the bottom **XY DISPLAY** menu button.
4. Press the side **GATED XYZ** menu button to select the Z (gate) source channel.
5. If needed, press the side Ch1 (x) Versus menu button to select the Y signal (Ch2 is the default).
6. Press the side **GATED BY** menu button to select the Z (gate) source channel.
7. Rotate the general-purpose knob to enter a value.
8. To properly place and scale the image, adjust the **VERTICAL SCALE** and **VERTICAL POSITION** with Ch1 (horizontal) and Ch2 (vertical) selected.

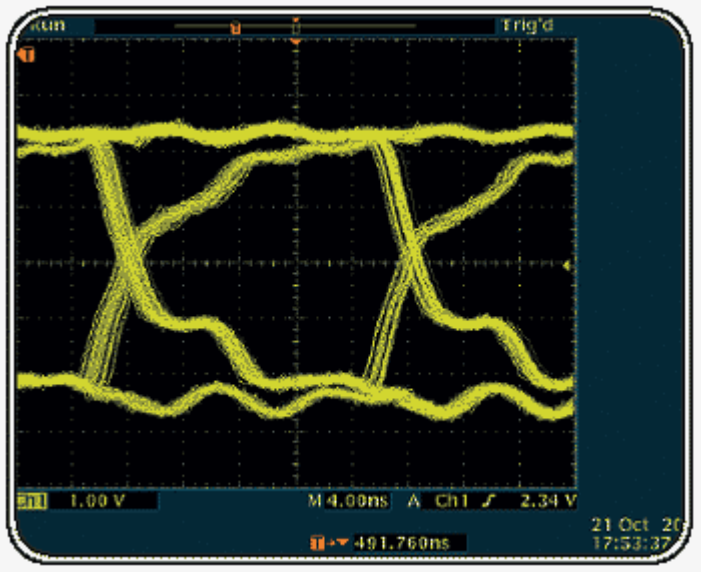


Use an eye diagram to check the quality of a communications signal

Communications technicians must characterize how well a communications signal complies with international standards by determining if the signal's bits are accurately crossing the communications channel. The TDS3000B Series allows these technicians to check the quality of a communications signal using eye diagrams.

To use an eye diagram to check the quality of a communications signal:

1. Press the front-panel **AUTOSET** button.
2. As desired, adjust the **HORIZONTAL SCALE** to adjust the width of the eye.
3. Adjust the front-panel **HORIZONTAL DELAY** to view both the positive and negative transitions at the same time.



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