

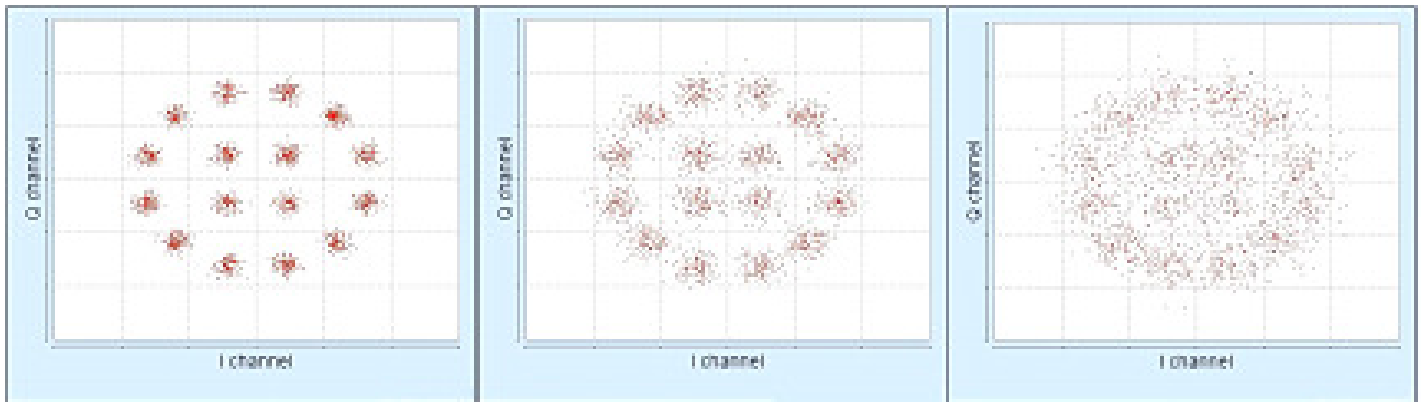
### OVERVIEW

Paradise has pioneered advanced link diagnostic tools in the industry, such as the Q Series modem Rx constellation monitor. This can be used to identify phase noise, thermal noise and various forms of distortion.

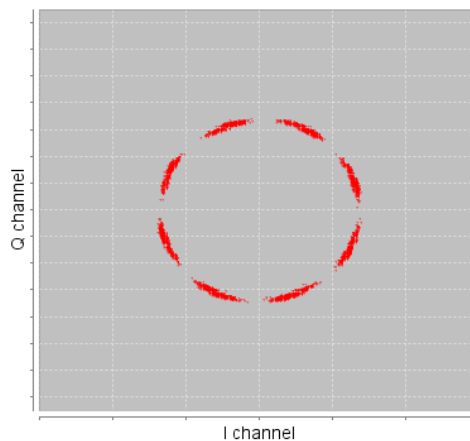
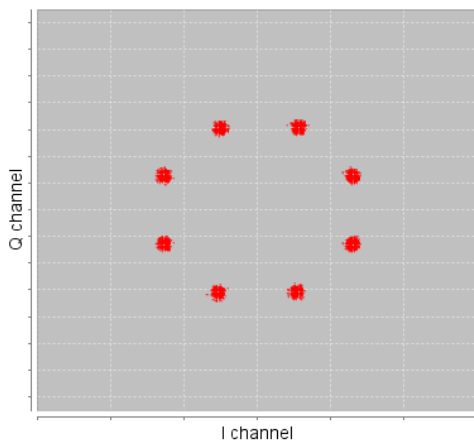
As thermal noise increases,  $E_b/N_0$  decreases and the diameter of the constellation points increase.

Phase noise can be seen as an elongation of the constellation points around a central axis point.

Amplitude compression can be seen as a deviation of the constellation points from their grid position along a radial axis.



**Effects of increasing thermal noise** shown on a 16APSK constellation as the  $E_b/N_0$  drops (from left to right).



**8PSK constellation showing the effects of phase noise**