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Transient Guardband Estimate

Stephen Crowder
Statistical Sciences, 09136

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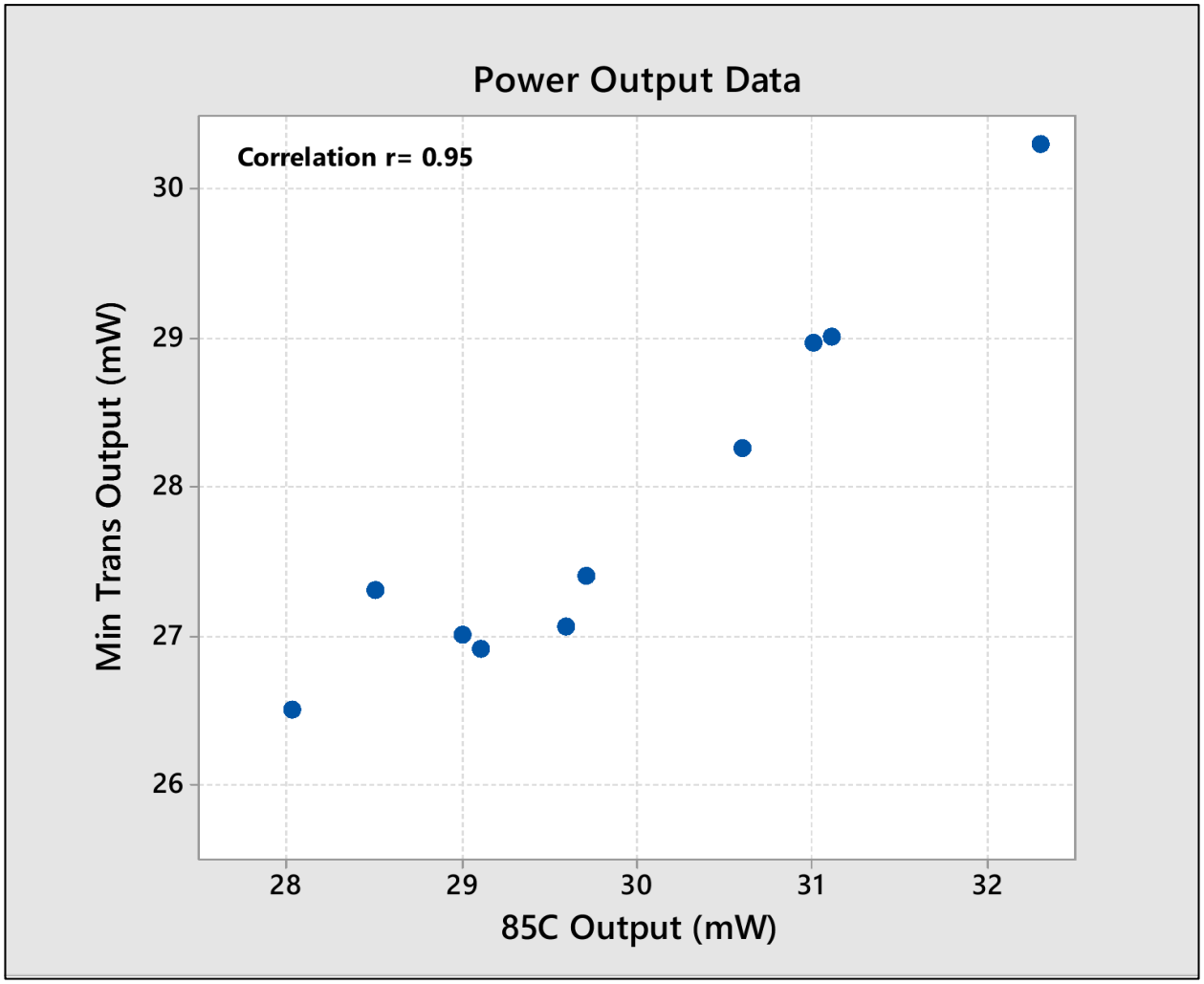
Power Output Data (mW)

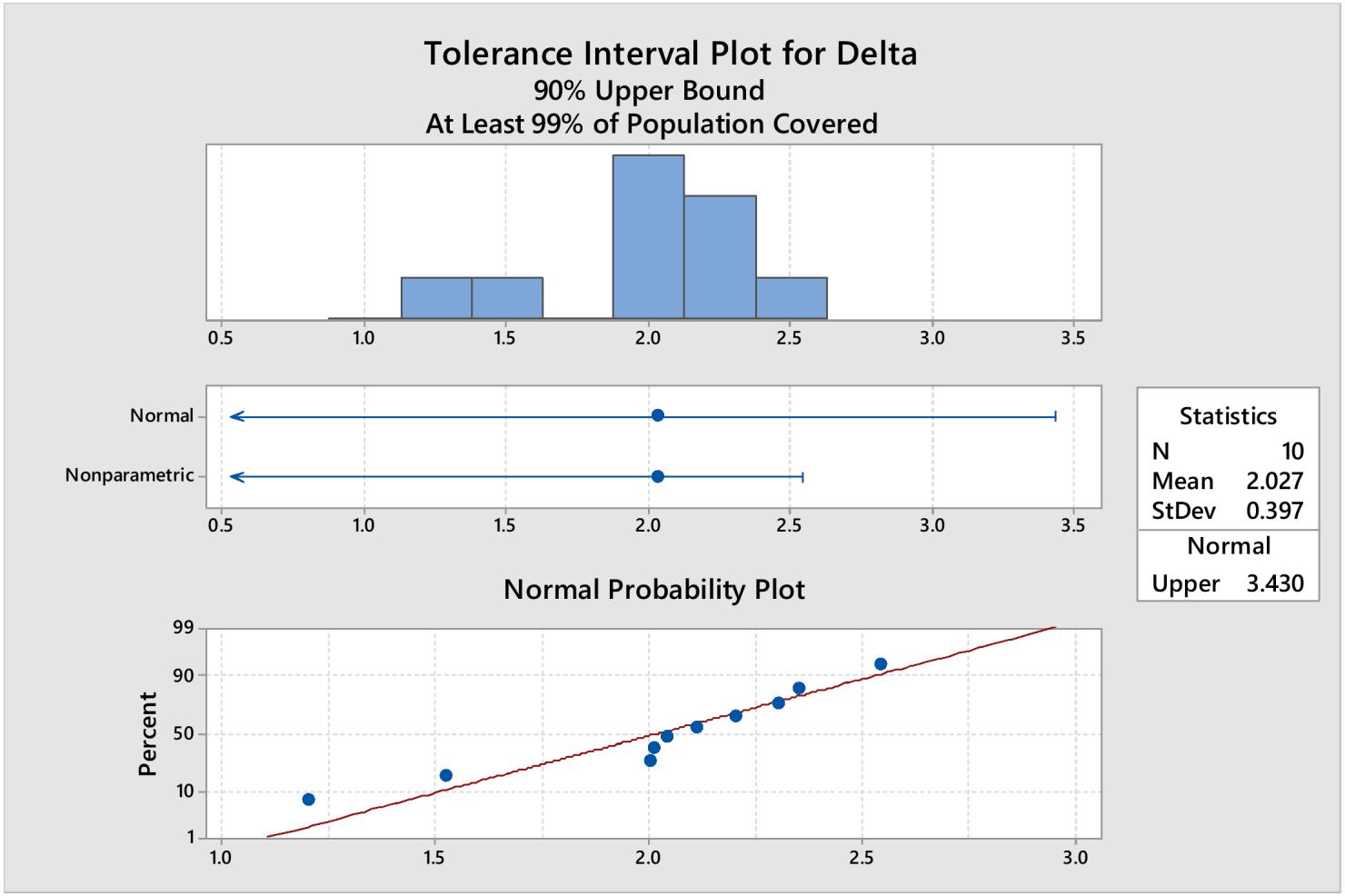
Unit SN	85C Output	Min Trans Output	Delta
CNS-0006	31.00	28.96	2.04
CNS-0013	32.30	30.29	2.01
CNS-0015	28.02	26.50	1.52
CNS-0016	30.60	28.25	2.35
CNS-0017	29.59	27.05	2.54
CNS-0019	31.11	29.00	2.11
CNS-0032	29.00	27.00	2.00
CNS-0033	29.70	27.40	2.30
CNS-0008	29.10	26.90	2.20
CNS-0009	28.50	27.30	1.20
CNS-0006	31.00	28.96	2.04

Delta = (85C Output) – (Min Trans Output)

Correlation Plot



Results Using Paired Analysis



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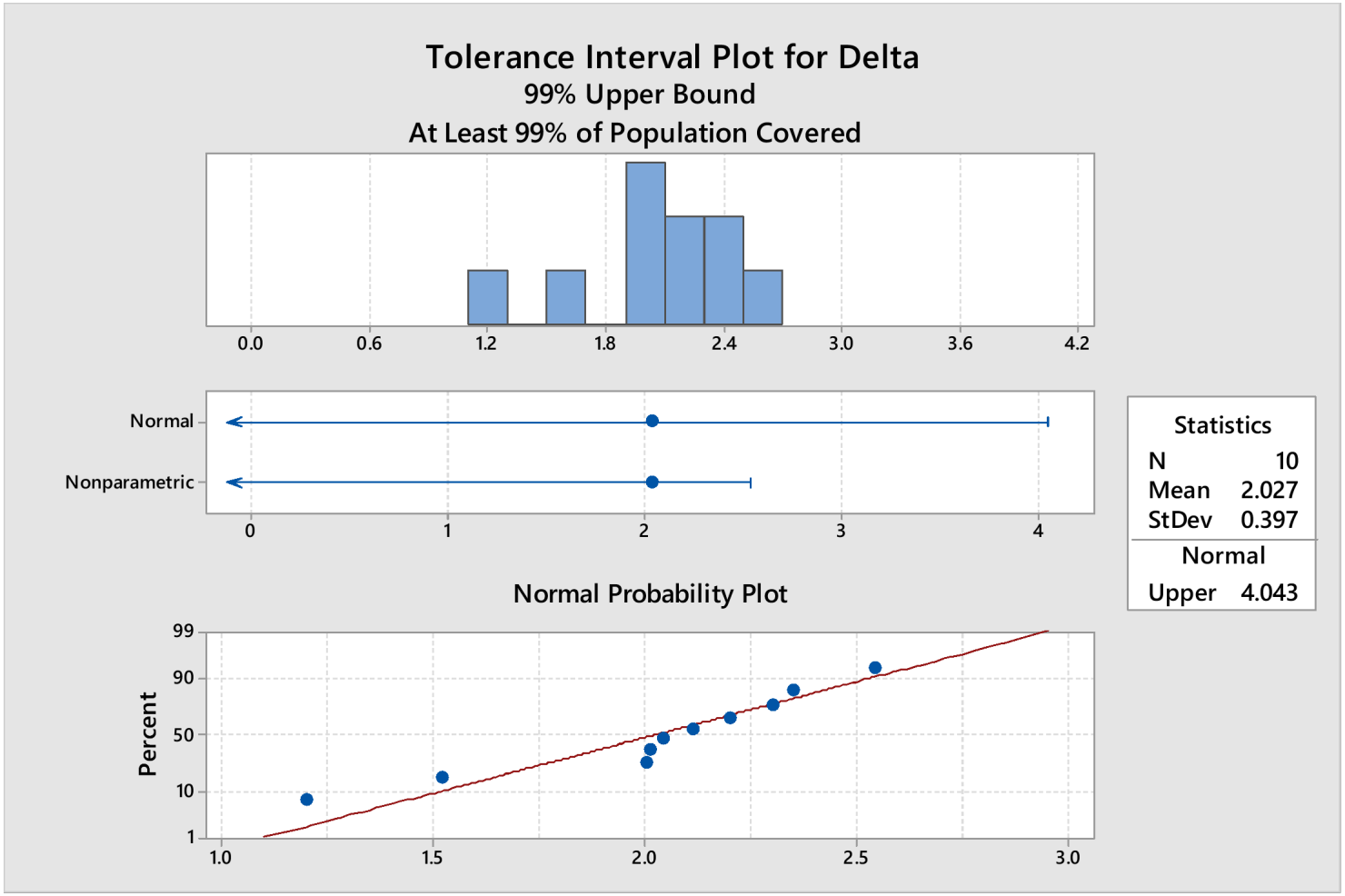

Results Using Paired Analysis

Population Covered	Confidence Level	Upper Bound of Tolerance Interval
99 %	90 %	3.43
99 %	99 %	4.04

Exact tolerance intervals for normal distributions

Minitab calculates exact $(1 - \alpha, P)$ tolerance intervals, where $1 - \alpha$ is the confidence level and P is the coverage (the target minimum percentage of population in the interval). The lower limit, L, and the upper limit, U, for all tolerance intervals are given by the following formulas:

$$L = \overline{X} - kS$$

$$U = \overline{X} + kS$$

Tolerance factor for one-sided intervals

The exact tolerance factor for a one-sided interval is given by the following equation:

$$k = \frac{t_{n-1,1-\alpha}(\delta)}{\sqrt{n}}$$

where $t_{n-1,1-\alpha}(\delta)$ is the $1 - \alpha$ percentile of the noncentral t-distribution with $n - 1$ degrees of freedom and noncentrality parameter, δ, which is given by the following formula:

$$\delta = z_p\sqrt{n}$$

k values with P= 0.99

n	CL	k
10	90%	3.54
20	90%	3.06
30	90%	2.89
10	99%	5.08
20	99%	3.84
30	99%	3.45

Table shows reduction in k value (and width of confidence interval) as a function of sample size.