

**Calculation of the Necessary Bandwidth
for
SATELLINE-M3-TR1 UHF Radio Data Modem Transmitter (Transceiver)**

SATELLINE-M3-TR1 radio modem uses frequency modulation and the signal is modulated with digital information. Based on these facts, the necessary bandwidth is calculated according to the formula in the section §2.202 (g) part III-A/1.

Calculation for 12.5 kHz channel spacing

$$B_n = 2M + 2DK, \quad M = B/2, \quad K = 1.2$$

$$B = 4800 \text{ bauds} \Rightarrow M = 2400 \text{ s}^{-1}$$

$$D = 3.3 \text{ kHz}$$

$$B_n = 2 \times 2400 \text{ Hz} + 2 \times 3300 \text{ Hz} \times 1.2 = 12.7 \text{ kHz}$$

Calculation for 25 kHz channel spacing

$$B_n = 2M + 2DK, \quad M = B/2, \quad K = 1.2$$

$$B = 9800 \text{ bauds} \Rightarrow M = 4800 \text{ s}^{-1}$$

$$D = 6 \text{ kHz}$$

$$B_n = 2 \times 4800 \text{ Hz} + 2 \times 6000 \text{ Hz} \times 1.2 = 24.0 \text{ kHz}$$

Note! Due to the fact that the maximum deviation never occurs simultaneously with the maximum modulation frequency, the real bandwidth of the emitted signal is lower than the ones calculated according to the formula above.