

TRANSMITTER DUTY CYCLE CALCULATIONS AND TIME DOMAIN INFORMATION

Duty Cycle is fixed because binary-coded, pulse-position type A1A modulation is used. Modulation rate is fixed at 167 bits per second. Therefore, each bit frame occupies 6 ms.

During transmission, the transmitter sequentially emits a group of 25 pulses in the form of a pulse-keyed carrier. Each pulse (transmitter ON time) has a duration of one millisecond (ms).

REAL TIME ANALYSIS: Refer to Page 6 for timing diagram. From time zero, one synchronization pulse of 1 ms duration occurs within a 6 ms "bitframe." Elapsed time: 6 ms.

Each of the remaining 24 information pulses occupy a 1 ms duration position within a 6 ms wide "bit frame" (24 frames)
Total elapsed time: 144 ms.

DUTY CYCLE FACTOR:

$$\frac{25 \text{ pulses (1ms)}}{150 \text{ ms}} = .1\bar{6}(20_{\log} \text{ voltage}) = -15.56\text{dB} (-16 \text{ practical})$$

This calculation is based on a 150 ms total cycle time which is representative of actual operation.

In compliance with Rule 15.205(b), the following duty cycle factor is used for all field strength calculations:
For a worst-case 100 ms interval occurring during the 144ms-long string of 24 bit frames:

$$\frac{100 \text{ ms}}{6 \text{ ms}} \text{ interval per frame} = 16.\bar{6} \text{ frames average, 17 pulses possible.}$$

$$.17(20_{\log} \text{ voltage}) = -15.6 \text{ dB}$$

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