

This Exhibit is the Necessary Bandwidth Calculation for STA file number 0015-EX-ST-2002. Confirmation Number EL11888. Dated 1-14-2002.

This STA request is to allow for the development testing of a device that will be part 15 compliant. The device will be On-Off Keyed, and operate at 315 Mhz with a maximum emitted power of 1.5uW. At the time of this writing, the modulation circuit is not designed, but the author plans to approximate a sinusoidal shaped rising and falling edges to reduce unwanted emissions.

To approximate the necessary bandwidth I have used the following:

$$BW = (W_c + W_a) - (W_c - W_a)$$

Which reduces to:

$$BW = 2W_a + W_c - W_c$$

Which again reduces to:

$$BW = 2W_a$$

In this case, the maximum bit frequency is 2.5Khz so the theoretical necessary bandwidth is:

$$BW = 2 * 2.5Khz = 5Khz.$$

Recognizing that this is an approximation, the author arbitrarily bumped this up to 6Khz on the application for STA.