

From: Generic Office of Engineering Technology <oetech@fccsun27w.fcc.gov>
Subject: Response to Inquiry to FCC (Tracking Number 417227)
To: tjohnson@ATCB.com

Inquiry:

We are reviewing a security (alarm system) device which falls under 15.231. This particular device transmits all information twice - once at 315 MHz and again at 345 MHz. This is to ensure emissions are not easily jammed, duplicated, etc for its security application. Please note that the entire transmission train for both frequencies (Time for F1 + Time for F2) meets with the timing requirements under 15.231 (i.e. < 5 seconds for alarm condition, < 2 sec per hour for supervision transmissions). Additionally, please note that the transmissions are sequential as they occur one after the other, not simultaneously.

1) Regarding this device, we note that last year the FCC released information regarding frequency hopper type of devices under 15.231 (see attached provided). Please confirm if we must add the 20 dB bandwidths of 315 and 345 to obtain the aggregate bandwidth as mentioned in the attached documents, or does this not apply in this case. It is uncertain why aggregate bandwidths would need to be considered since the Transmissions are not on at the same time. Note that any further explanation as to why aggregate must be considered if they are not on at the same time would be desirable so we can provide appropriate explanations to our client.

2) For consideration of aggregate bandwidth, it is assumed that this is the sum of the 20 dB bandwidths. But it is uncertain how to treat the limit. Limit @ 315 MHz = 787.5 kHz and @345 MHz = 862.5 kHz. If we are considering aggregate bandwidths, is the aggregate bandwidth limit the worse case of the various channels under 15.231 (787.5 kHz), the largest allowable of the various channels (862.5 kHz), or is the limit also the sum of the various limits under 15.231 (787.5 + 862.5 kHz = 1650 kHz). Please explain.

3) Depending on the answer to 1) & 2) above, if the aggregate bandwidth does apply, please explain what is the acceptable RBW to use according to the FCC. Over the years the FCC has typically cited a > 1% RBW (RBW to occupied bandwidth measured) policy in many cases for occupied bandwidth tests (except where FCC rules states otherwise). However the newest revision of ANSI C63.4 (section 13.1.7 for occupied bandwidth measurements) mentions for this frequency range a minimum of 10 kHz and > 5% RBW. While I agree that this would suffice for most single channel occupied bandwidth measurements, it would seem that when taking aggregate bandwidths using the common RBW in most spectrum analyzers and using a >5% RBW instead of > 1% RBW that this will compound the overestimation of the bandwidths to a point that many systems would not ! meet the bandwidth if we apply an aggregate bandwidth in this case of 787.5 kHz. It would seem reasonable that for consideration of aggregate bandwidths, using the 1% would be more appropriate. Please comment as currently this applicant may need to retest for purposes of showing aggregate

bandwidth in compliance with the above. Preliminary estimations appear to suggest that adding the >1% bandwidths should be ok, but adding the >5% may be over the limit. Please confirm if >1% is acceptable.

Response:

- 1) Yes, the aggregate must be used even though transmissions aren't conducted at the same time all the time to prevent fast hoppers acting like a spread spectrum device.
- 2) No, you pick the worst case (787.5 kHz)
- 3) You must use 1%.

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