Exhibit P: Explanation of Class II Permissive Change

FCC ID: CGGAA2

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Differences between the production RCR-A and RCR-C and the new version.

There are two main differences between the production RCR-A and RCR-C PCB assemblies and the new version, which is called the RCR-50. The RCR-50 design will also become the new RCR-A, RCR-C, and RCR-PET. The housing remains unchanged. The only difference between the new RCR-PET and the new RCR-A is the Fresnel lens and the signal processing firmware in the microprocessor.

The two differences are:

1. The new RCR-50 adjusts the power setting of the microwave transmitter to compensate for distance. The inner ranges need less power for detection than the outer shells so the power is adjusted to compensate for the path loss. Two resistors, R26 and R29, set the power settings. The value of these resistors has been chosen to give fairly uniform sensitivity over the detection pattern. The value of these two resistors are different between the RCR-50 (50 foot range) and the RCR-A, RCR-C, and RCR-PET, which all have a 35 foot range. In the original RCR-A & C design, the gain of the microwave amplifier stage was adjusted to compensate for the difference in sensitivity. The improvement in method results in a more uniform field and greater efficiency, since the closer ranges now use less microwave power.

2. The old RCR-A & C design uses the microprocessor to generate the range switching signals. Since the pulse repetition frequency (PRF) is 350 kHz, the microprocessor is kept very busy actively switching ranges. Because the PRF generator and the microprocessor clock are asynchronous, there is some jitter between the range switching and the PRF. This jitter causes noise in the received Doppler signal.

   The new design switches the ranges synchronously through the use of a binary down counter (74AC169), which has been added to this design. The micro-processor reads the range setting jumper (J2) and sets the countdown number of the binary down counter to the appropriate setting. The counter counts down from that number in a continuous loop whose rate is set by the PRF generator. The only time the microprocessor has to change the number it sends to the counter is when the range jumper setting is changed. This frees the microprocessor to do some more sophisticated processing, since it has more time, and eliminates the noise caused by the asynchronous clocks.

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