

According to the manufacturer and test lab, the source-based duty cycle is 19% giving an EIRP of 77.3mW, well below the FCC TCB limitation of 200mW.

The attached photo shows that the device meets the antenna location and distance from bystander's body requirements of 2.5cm and 5cm respectively.

We also note that this is an occupational device used by utility meter readers in the course of their work.

Accordingly, we conclude that the device is eligible for TCB review and approval and we request that you reinstate the grant.

Jon Curtis  
TCB

There are two attachments.

1. A verification of the antenna distance from the user with picture as a Word document.
2. Explanation of duty cycle from the Itron Design Engineer. I think the following points are

key:

- a) When transmitting the duty cycle is 50%.
- b) "Once the radio cycle is initiated, the G5R Transmit cycle time is limited to 3.5 Seconds, and the Receiver is limited to 5.5 seconds."
- c)  $0.5 * (3.5 / (3.5 + 5.5)) = .19$  or 19% duty cycle

Let me know if you have enough information for the FCC.

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From: David M. Beliveau  
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Date: Nov 15, 2000

**Subject: G5R hand held computer and integrated radio transmitter duty cycle information.**

Dear Paul,

As per our phone conversation, I have provided Transmit Duty Cycle information and typical operator usage on the G5R.

First we need to define some terms and definitions.

1. G5R: Hand held computer with an integrated Radio. The Transmitter power is not to exceed .25W in the 952 to 957 MHz band.
2. ERT: Is a radio device that is installed on or next to an Electric, Gas or Water meter, it counts the consumption usage and reports it via radio signals to this particular hand held transceiver (G5R)
3. ERT ROUTE: Is a compiled list or database of the houses to read for any particular meter reader for that day. The route is downloaded into the G5R (Hand Held Transceiver) for the meter reader to walk the route and capture the RF reads from the various ERTs.
4. G5R Transmit Modulation Rates: The ERT wakeup frequency is from 952 – 957 MHz, the G5R TX Carrier is 100% AM Pulse modulated at data rates (wakeup tones) from 27 to 57 Hz, at a 50% duty cycle. The Transmit time of the G5R is 3.5 seconds. This wakes up the ERT, the ERT then responds with its packeted data, which is read by the receiver.
5. ERT Types: There are different types of ERTs. One family requires receiving a wakeup tone to wakeup and transmit its data, another family doesn't have a receiver and volunteers or bubbles up the data at timed intervals from 1 to 4 seconds, requiring a G5R receiver cycle only.

The following points will describe possible and typical meter reader usage of the G5R.

1. If the ERT Route is a population of Bubble Up ERTs, the G5R being under software control, doesn't turn the Transmitter on at all, just the receiver.
2. If the ERT Route is a population of ERTs that require a Wake Up Tone, the G5R (via the operating system and application software) will generate a radio wake and read cycle.
3. The ERT, when awakened, transmits its data eight times (7ms) and then goes to sleep for 10 seconds.
4. This sleep time of 10 seconds plus operating system and application overhead of 5 seconds, limit the transmit rate to a minimum time of once every 15 seconds. Since the ERT goes to sleep the application software actually waits for this amount of time automatically before it will allow a radio cycle to occur. This is done to conserve battery power and a read cycle sooner than that wouldn't produce any additional ERT reads.
5. Once the radio cycle is initiated, the G5R Transmit cycle time is limited to 3.5 Seconds, and the Receiver is limited to 5.5 seconds.
6. In a typical meter reader route the user will initiate the radio cycle only when the next house has not been found in the routes database of past reads. The G5R, in a heavily populated neighborhood of ERTs, reads about 50 to 80 ERTs. These could be a mixture of Electric, Gas or Water ERTs. Therefore the minimum that a radio cycle is required is approximately once every minute to an average route read time of once every 5 minutes or more. Again the Transmitter is on for 3.5 seconds out of each minute for a typical minimum, to 3.5 seconds out of every 5 minutes or more for a maximum.
7. The G5R Hand Held is typically kept at arms length from the meter reader during the cycle. The meter reader has to look at the display to identify which house has been read or not read so he can continue with the structured route.
8. The output power of the radio in production will be calibrated from 23 dBm (200mW) to 23.9dBm (250 mW).

I hope this answers all your concerns, if not please don't hesitate to call.

David M. Beliveau, Itron Hand Held Engineering.  
Direct Line (509) 891 -3608

Documentation for the Itron Transmitter

To Whom it May Concern,

The Itron transmitter is a handheld device. Please refer to the attached photograph for the following measurement documentation. The distance between the base of the antenna and the nearest point of the user's hand is approximately 10 cm, when held in its normal operating position. The displacement of the transmitter from the user's body is approximately 37 cm when measuring the distance between the nearest point of the user's torso and the base of the antenna.

Thank You,

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Paul G. Slavens  
Acme Testing Chief Engineer

