Applicant: Orion Energy Systems Ltd.

FCC ID: UTV WREP4CRT

REPLY TO TCB COMMENTS

1. See attached documents for RF daughter board: TDL-9927A-PCB.pdf and TDL-9927A-SCH.pdf.

2. Have included photos of the rear side of the RF daughter board, see attached internal photos_modify.pdf.

3. There is a timer built into the transmitter. Once the relay closes, it will transmitter the signal for one second, then it will stop transmitting even though the relay is still closed. It will only transmit again for one second after the relays is released and closed again. It works like push button switch. If you push the button down, it will transmit for one second and then stop transmitting even though you still hold down the push button. After you release the push button and then push the button down again, it will transmit the signal again for one second. For the repeater, it has timer built into it too. After it successfully receives the signal (incoming signal address matches the receiving address on the repeater), it will idles 0.2 second. Then send out the control signal for the receivers for 1 second controlled by a timer built into the repeater, idles for another 0.2 second, then second the repeating signal for 1 second controlled by the timer built into the repeater. After this, it goes into idle mode again.

Section 15.231(a)(2) was applied, see clause 6.2 of the attached modified test report ATE20062807.pdf.

4. The repeater has receiving address. The repeater can only receive the signal when the signal address matches the repeater receiving address. Then it will process the signal. Otherwise the repeater will remain idle and will not transmit. After it successfully receives the signal, it will idle for 0.2 second to make sure the previous one second signal is completely die out, then it will re-transmit the data with receiver address for 0.5 second. After that it idles for 0.2 second, transmit the data with the repeating address for the next repeater to receive the data for 0.5 second, then it goes into idle mode.

The power levels are provided in the clause 4 of the attached test report ATE20062807.pdf.

The repeater will not receive two signals within 5 seconds because this is a chain reaction. It can only receive the signal from the repeater right ahead of it. It can not receive any other signal because each repeater is individually addressed. The only time the repeater will receive the signal with 5 second is that the transmitter sends out more than one signal within 5 seconds. It is just like the push button remote control. If you push the bottom twice within 5 seconds, then the repeater will receive two signals within 5 second. It will repeat the signals as it usually does. When we do the control, it can be and will be avoided to transmit two signals with 5 seconds.

5. For one system, only one transmitter, multi repeaters and multi receivers. The transmitter only transmits for one second and the repeater only transmits two times for 0.5 second for each time. All of them at different time. I believe the duty factor for each of them should be the same. Here is how the system works: One system consists of one transmitter, multi repeaters and multi receivers. The transmitter transmits the signal for one second controlled by the timer on the transmitter, then the repeater receives the signal. After it receives the signal, it idles for 0.2 second, then it transmits the signal for 0.5 second to control the receivers. After that, it idles for 0.2 second, then transmit the signal with repeating address to relay the signal to the next repeater for 0.5 second and so on.

The repeater just repeats the received message.

6. Duty factors are all the same.

7. Yes this is the first application of FCC ID of the applicant. He will apply for FCC ID for his transmitter later.

8. The repeater is manually programmable for its receiving, control and repeating addresses through jumpers. There are three addresses on one repeater. One is the receiving address. Only the signal with the address the same as the receiving address will be received and processed by the repeater. Then there is control address. After the repeater receives the signal successfully, it will idle for 0.2 second, then send out the data (on or off) with the control address for 0.5 second. After that, it will idle for another 0.2 second, then send out the data for 0.5 second with a different repeating address for next repeater to receive the signal.

9. By the address code.

Pls. note that the above technical explanations were described by the applicant. ATC only conducted testing accordingly.

TCB COMMENTS

1. Please submit schematics for the RF daughter board that is mounted in upright position.

2. Please submit internal photos of the rear side of the RF daughter board.

3. This is not a manually operated transmitter as stated in the test report, but an automatically activated transmitter. Therefore Section 15.231(a)(2) applies "A transmitter activated automatically shall cease transmission within 5 seconds after activation."

4. Based upon this being a repeater, a detailed description on how this device operates and ensures compliance with 15.231(a) timing requirements and power levels should be provided. Note that to be allowed as a repeater under Part 15 the device may only transmit after receiving, demodulating, and recognizing the incoming signal prior to retransmission. The theory should explain how the device meets these requirements.

Also, if the repeater received 2 messages in < 5 seconds, does it retransmit both messages or one message? Does it transmit them as a group or space them apart. If it were to receive a message with a duration of > 5 seconds, how does it handle it. Please explain?

5. The various transmitters of the system most likely have different duty factors. It is uncertain how worst case duty factors for this device can adequately be determined and assured for all types of devices expected to be able to repeat. Please provide detailed explanation about all transmitters, repeaters and other devices that are part of the system.

Please explain whether the duty factor of the transmitted signal depends on the duty factor of the received message. Does the device repeat the received message or always generate a new message?

6. If the device always generates a new message, please make sure that the duty cycle plot in the test report shows the worst case situation for all possible types of codes and transmission modes (encoder for repeater and encoder for receiver).

7. I could not find the other FCC approved devices (transmitters and receivers) that belong to the system. There is currently no application on file with the FCC for Grantee Code UTV.

8. Please provide information regarding the registration process, if any. The device does not appear to be programmable from the user manual provided so it is uncertain how this device knows exactly what packets it can retransmit (and also reject) and what other devices it is associated with.

Therefore, please explain how does the repeater know what device(s) it is associated with?

9. What does the device decode to ensure something is part of its system? If another system was nearby operating on the same frequency, how does this device reject it? What specifically is it looking for before it acknowledges something is valid for retransmit? Please explain.

Best regards,
Klaus Knoerig

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