June 14, 2002
RE: Internet Telemetry
FCC ID: 02N1500

After a review of the submitted information, I have a few comments on the above referenced Application.

1) Please provide a FRN Number for Internet Telemetry. This is now required for all Grantees - (reference MD Docket No. 00-205). To obtain an FRN online, visit the FCC's Web site at www.fcc.gov and click the Commission Registration System (CORES) link. For further assistance, please either refer to the FAQ at this same link; contact the CORES helpdesk at CORES@fcc.gov; or call the CORES helpdesk toll-free number: 1-877-480-3201.

0007-1485-47

2) Please adjust the 731 form to list actual lowest and highest frequencies of transmission instead of the general range 902-928 MHz.

906.5 – 927.875 MHz. Please see modified form.

3) Please provide a clearer photograph(s) of just the RF portion of the board.

Please see new photo.

4) The photographs only show a 6 pin connector. Please provide further photographs and information that show how external antennas attach to the product.

Please see photo of antenna connector. The antenna connector is a Hirose M5-147 special order connector. The antennas have a permanently affixed coaxial cable with a mating connector.

5) The users manuals mention 3 models: TIM1500, TIM1500E, TIM1500b (page 8 of 33). Although not specifically stated, it appears that a modular approval being requested for this device. If so, please provide the information as specified by Public Notice regarding modular approvals (see attached). As part of this response, be sure to cover the following:

a) Please comment on how the tested configurations may be representative of the stand-alone configuration when the version tested appears to be contained in its own housing, but other versions may not include the housing.

b) Since the EUT may be powered externally from DC and is also a module that may be installed in other products, it must be assumed that power may be provided from an AC/DC power supply at the discretion of the OEM integrator. Please provide data using a typical off the shelf AC/DC supply to show compliance with 15.207.

Please see request for modular approval. The EUT is intended for battery supply.

5) The theory of operation discusses 6 different hop tables that may be used in the product. From various statements made in the theory of operation it is not clear if all tables are the same size or different sizes. Please confirm the minimum and maximum hop table sizes.

Please refer to the hopping algorithm document. The hop tables are all the same size (50 channels).

6) The OEM manual makes mention of 2 types of external antennas (page 19 of 25), a Yagi and omni-directional antenna. The test report only mentions the Yagi. Please either remove reference to the omni-directional antenna in the users manual(s) or include spurious emissions test data for this antenna as well. Please note that the FCC requires each type of antenna to be tested for spurious emissions. The only antennas that will be approved with this product are the antennas documented in the filing. For any antennas that have not been approved (i.e. the omni-directional mentioned), the Grantee will have to file a Class II permissive change to approve the new antenna. Currently, the device with any other antennas other than the internal ones will be considered unauthorized equipment. The Grant will be conditional on acceptance of these terms. Please comment.

There is only one external antenna at this time. .

7) Please provide detailed information regarding each antenna such as manufacturer, make, model and gain as appropriate.

Larsen M/N. YA6 900, 6 dBi, 3 element Yagi

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9) Currently TCB's are only authorize mobile classification spread spectrum transmitters in the 900 MHz band with both a peak conducted and peak radiated (EIRP) output power not exceeding 300 mW (see attached exclusion list). The EIRP of this transmitter with the Yagi antenna is 692 mW. The FCC is currently working to change or eliminate many of the restrictions on TCB's and the latest information we have from the FCC is that they hope to publish this information by the end of this month. Options available for handling this application currently are:
a) We can go forth and review the application in completion, but will have to wait until the FCC releases the changed exclusion list before we issue the grant due to the RF exposure limitations on TCB's.
b) If certain configurations that exceed the 300 mW EIRP limitation may be considered as fixed instead of mobile (distance of 2 meters between antenna and user instead of 20 cm), then we may be able to go ahead with the application now with adjustments to the MPE calculations and users manual to cover both mobile and fixed installations. If this route is selected, it will affect the suggestive use of certain MPE exhibits and the users manual information given here.
c) If time source based averaging can be applied this may be an additional option (the 60 msec TX followed by a 20 msec forced rest = 75% is not significant enough itself, a duty cycle of 43% or less would be required). Are there any more possibilities for lowering the duty cycle such as delays in the transmission that may be taken advantage of if the over the air data rate is faster than the incoming serial data?
d) Resubmit the application to the FCC.

We would like to go ahead with the review with the internal antenna listed as mobile and the external antenna as fixed. We have uploaded MPE predictions for both scenarios and have added instructions/warnings in both the user and OEM manuals.
10) The General Users Manual does not appear to contain the FCC statements as specified by 15.105(b).

Please see revised user manual.
11) MPE statements in the General Users Manual should also include the following: "This unit must not be co-located or operating in conjunction with any other antenna or transmitter".

Please see revised user manual.
12) The OEM users manual on page 19 of 25 states:
"It is not recommended that OEM users substitute other antenna types, as they may cause violation of the conditions of the TIM1500's FCC Part 15 certification. "
The phrase "It is not recommended ….may cause…" is not considered appropriate. This should be reworded in a fashion such as "The OEM should never substitute other antenna types other than what Internet Telemetry provides as this will void the user's authority to operate the equipment ".

Please see revised OEM manual.
13) The OEM users manual on page 22 of 25 states:
"Reference to "The TIM1500 is certified as a Class B Computing Device under Part 15 of the FCC rules as a receiver. As a transmitter, the TIM1500 is certified under Part 15.245 of the FCC."
This is not entirely correct. The device is not being certified as a Class B Computing Device and the section of the rules that the device is under is 15.247. This statement should be rephrased to the following or similar:
"The TIM1500 is verified as a Class B digital device & receiver under Part 15 of the FCC rules. As a transmitter, the TIM1500 is certified under Part 15.247 of the FCC".

Please see revised OEM manual.
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14) Section 4.1 of the OEM manual should include further information as to how the OEM must use the module in order to maintain RF exposure compliance and that it's approval is limited only to devices that can maintain the 20 cm distance between the antenna and body. In order to make sure that the integrators are given enough information, please add the following suggestive information (or similar) to the users manual:
This device is intended only for OEM integrators under the following conditions:
1) The unit must be installed such that the antenna (internal or external) will always maintain 20 cm between the antenna and users or nearby people, and
2) The transmitter module may not be co-located with any other transmitter or antenna.
As long as the 2 conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).
IMPORTANT NOTE: In the event that these conditions can not be met (for example changes to the antenna type or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.
End Product Labeling
This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: O2N1500".
Manual Information That Must be Included
The users manual for end users must include the following information in a prominent location "IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

Please see revised OEM manual
14) Please explain how the device accepts data (such as the dry contacts mentioned in the manual). Are there other ports other than the RS232 through the 6 pin connector?

There are no other ports besides the RS232 6 pin port. The data input is simple TTL logic.
15) The device should be tested fully configured (all cables) and in a receive mode of operation from 30 MHz to 5000 MHz to class B emissions. Please provide this data and add the appropriate equipment to the equipment list.

The EUT was tested with a laptop computer attached to the 6 pin connector and a battery.
16) The test report (page 14 of 40) does not clearly indicate how the peak output power was measured. Since this device incorporates both an internal and external antenna, was this based upon a conducted measurement and corrected for gain of antenna, and EIRP measurement, or both? What were the settings used? Also, please report the power for low, middle, and high channels.

Peak power output was measured using the antenna substitution method. The spectrum analyzer RBW and VBW were set to 1 MHz (>5 times the 20 dB bandwidth). Please see the revised report in which the full data sheet has been inserted.

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Any questions about the content of this correspondence should be directed to the sender.