

Date: 29 January 2008

Chief, Authorization Branch
Federal Communications Commission
7435 Oakland Mills Road
Columbia, MS 21046

Subject: Request for unlicensed Modular Transmitter Approval.

Reference: FCC 07-56A1 47 CFR 15.212

To Whom It May Concern:

Focus Enhancements Inc. hereby requests FCC Equipment Authorization as a Singular Modular Transmitter of the Focus Enhancements Model TT2201, UWB Module, FCC ID-UA9TT2201. Focus Enhancements intends to manufacture this device and market it under several brand names and brand I.D.s as a computer accessory or as an item connected to other equipment. This letter addresses the information required by points one through eight of 47 CFR 15.212.

1. The modular transmitter must have its own RF shielding. All shielding necessary for normal operation is accomplished by the multi-layer construction of the printed wiring board which incorporates multiple ground layers in its construction. As this transmitter is designed to operate stand-alone in its own enclosure, connected to an industry-standard USB interface, no additional shielding is incorporated to minimize coupling.
2. The modular transmitter must have buffered modulation/data inputs. The Focus Enhancements TT2201 UWB Module receives data via the industry-standard USB 2.0 interface. This USB interface is implemented within the TT1013 integrated circuit as may be seen on sheet 6 of the schematic diagram included in the filing for FCC Equipment Authorization. The USB interface limits the data rate to those defined by the USB standard.
3. The modular transmitter must have its own power supply regulation. The Focus Enhancements TT2201 UWB module receives power from the USB interface via the standard USB connector. This +5 Volt source is regulated on the module to produce the three power domains required by the module circuitry; +3.3V, +1.8V, and +1.2V. The power regulation topology may be seen on sheet 3 of the schematic diagram included in the filing for FCC Equipment Authorization.
4. The modular transmitter antenna must comply with the antenna and transmission system requirements of section 15.203, 15.204(b) and 15.204(c) The antenna of the Focus Enhancements TT2201 UWB module is a Fujitsu N880-9701-T011 printed antenna which is connected to the printed wiring board using a JST AY01-152-D0035-000 cable. It is also attached to the module using adhesive.
5. The modular transmitter must be tested in a stand-alone configuration. As described in section 2.5.3 of the test report included in the filing for FCC equipment authorization, the TT2201 UWB module was tested without a plastic housing, connected to the USB port of a P.C as it

usually intends to operate. The TT2201 is designed with an industry standard USB connector as its electrical and mechanical interface to a host or a device system.

6. The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying the FCC identification number. An example of the label which will be used is included in the filling of the FCC equipment Authorization.
7. The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter. Part 15.519 of the FCC rules and regulation requires that a UWB transmitter shall transmit only when it is sending information to an associated receiver. That rules part also requires that the UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgement of the reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting. This requirement is met by design and is implemented by the firmware encoded into the device.
8. The modular transmitter must comply with any applicable RF exposure requirements in its final configuration. From the measurement data we can see that the peak detected EIRP at 3 meters distance and 8 MHz RBW yields a result of -27.55dBm. Translated to 20 cm this would yield a result of -4.03 dBm. Correlating this to a worst-case scenario with a 50 MHz RBW would yield 20.4 dBm EIRP. 20.4 dBm is equal to 110mW EIRP. Plugging this into the above equation yields:

$$S = \frac{110}{4\pi(20)^2} = 0.0219mW / cm^2$$

Based on these worse case calculations the device is well below the maximum permissible exposure limit of 1mW/cm2 by a large margin.

Michael Ngo
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