



FEDERAL COMMUNICATIONS COMMISSION
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DATE: June 11, 1998
FROM: Gregory M. Czumak
REFERENCE: your fax dated May 20, 1998
NO. OF PAGES: one
TO: Scott McCutchan
ORGANIZATION: Compatible Electronics

Dear Scott :

This is in response to your fax dated May 20, 1998. There are no official FCC Rules that permit authorization of a transmitter as a module but the following standards have been uniformly applied as a Commission policy in support of industry needs. For a module to be approved, it must satisfy the following requirements:

- (1) a modular transmitter must have its own RF shielding
- (2) a modular transmitter must have buffered modulation/data inputs (if such inputs are provided)
- (3) a modular transmitter must have its own power supply regulation
- (4) a modular transmitter must have an antenna which complies with the requirements of Section 15.203 (permanently attached or employs a "unique" antenna coupler)
- (5) a modular transmitter must be tested in a stand-alone configuration, i.e., the antenna, AC or DC power and data input/output lines must be connected to the module but, the module must not be inside another case during testing
- (6) a modular transmitter must be labelled with its own FCC ID number, and if the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: XYZMODEL1" or "Contains TXFCC ID: XYZMODEL1." The exact wording is not specified in our Rules (since modules are not specifically addressed), so you may use similar wording which expresses the same meaning.

The only other issue that may need to be addressed is the RF exposure limit mentioned in Section 15.247(b)(4) of the rules for spread spectrum transmitter operation. All other sections of Part 15 do not possess enough power to present a problem with the RF exposure limits. However, a spread spectrum transmitter operated at permissible power levels may pose a threat to RF safety, therefore, compliance with the RF exposure limits must be addressed for spread spectrum transmitter modules.

Please note that if modular approval is granted for a device, the grant of authorization will specifically use the term "module."

If you have additional questions on this subject, please do not hesitate to contact me.

February 21, 2001

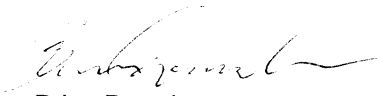
Federal Communications Commission
Equipment Authorization Division
7435 Oakland Mills Road
Columbia, MD 21046

Dear Review Personnel:

The purpose of this letter is to comment on the attached filing, which requests a Grant of Authorization for a RF transceiver module. Since there are no officially stated rules governing the approval of a module, we are relying on the FCC's stated opinion that has been uniformly applied to products of this type. I have attached an example of that opinion, which defines six points which must be satisfied in order to receive approval as a module. The module in the attached filing meets these points as follows:

- 1) The module includes a full metal RF shield over all of the RF components. In addition, careful attention was given to the layout of the board traces and system grounding to control any unintentional emissions.
- 2) The module uses an on board buffer to prevent incorrect signals applied to the transmit data input from causing over-modulation or other unintentional emissions from the module. In addition, this buffer uses an enable line that prevents any modulation when the module is not in the transmit mode.
- 3) The module includes precision on board voltage regulators for all RF components. Supply voltage variations will not affect the modules intentional or unintentional emissions. In addition, the module incorporates a variable gain power amplifier that uses the internal regulated voltage to set the output power, and additional circuitry that shuts down the power amplifier when the module is not in the transmit mode.
- 4) The module was tested using two different antennas, a direct mounted antenna that is attached directly to the module, and a remote mounted antenna that includes a coaxial cable. Both of these antennas are connected to the module using a unique antenna connector (a special TNC connector that uses a left hand thread), which is not available to the general public.
- 5) The module was tested in a stand-alone configuration.
- 6) The module will include a label with its FCC ID number as proposed in the attached drawings. We currently plan to use this module internal to end products that we manufacture, where the label on the module is not visible. I have also enclosed drawings that depict the proposed labeling for these products that include the module identification.

Respectfully,



Brian Dearden
Staff Engineer - Project Manager
Barton Instrument Systems LLC