



Subject: Modular Approval Request  
FCC ID: LOBSRF307  
07/15/2009

Dear Application Examiner,

Cervis Inc. (aka Structured Mining Systems), would like to have your authorization for single modular approval of the radio transmitter module FCC ID: LOBSRF307 so as to be used with various Cervis Inc. product varieties where the application-specific input and output electronics may change. The radio module is intended for use in "single modular transmitter" applications, where the RF analog functions and integrated transmitter digital control circuits reside in a single integrated circuit (RF IC) contained in a standardized module that may be mechanically distinct from the host application's system-level functional controller circuits, or may be implemented as part of a host application printed circuit board layout. The functional module is described as Cervis part number RFM307. The mechanically distinct version of the module is designated as Cervis part number 07420307-A-0, which complies with the RFM307 functional description. For the purposes of this document, both are referred to as the "radio module." The radio module is being submitted for compliance testing using a SmaRT BU-200H as a typical host application containing the 07420307-A-0 radio module under test and demonstrating a typical internal and external antenna types. The requirements of Public Notice DA00-1407 have been met and shown on the following statements.

15.212(a)(1)(i)

*The radio elements of the modular transmitter must their own shielding.* The radio elements of the module, including the crystal and tuning capacitors, are shielded.

15.212(a)(1)(ii)

*The modular transmitter must have buffered modulation/data inputs, if such inputs are provided.* The radio module contains buffered digital control inputs and outputs. There are no direct connections to transmission modulators. Modulation and frequency control functions are performed by the integrated transmitter control element. The component with buffered digital inputs and outputs is the RF IC, Atmel AT86RF230.

15.212(a)(1)(iii)

*The modular transmitter must have its own power supply regulation.* The RF IC has integrated internal DC regulators that provide regulated power to the internal analog and digital circuits that control radio functions. The RF module contains a pre-regulator in the DC input port, a MicroChip MCP1700-2.5, that supplies power to the RF analog circuits and provides an extra level power supply noise reduction and voltage stability. The host applications contain DC linear regulators supplying power to the RF module.

15.212(a)(1)(iv)

*The modular transmitter must comply with the antenna requirements of section 15.203 and 15.204(C).* The RF module is always to be used in conjunction with an approved antenna type, both of which must be included as paired items in every host application's bill of materials. The module itself provides two co-located means of connecting an antenna: a unique micro-coax receptacle or a 50 Ohm micro-stripline port. This has been done because the best mounting location for an antenna is commonly not the same as the best mounting location for the RF

module. The host application must always include either an internally mounted approved antenna, or an external approved antenna mount that uses a unique connector along with any external cables and an approved external antenna. In all cases, equipment delivered to end users will be a complete package that includes an approved antenna. Only antenna types that have actually been tested with the module may be incorporated into a host application. The RF module will never be supplied to end users separate from the host application.

At this time, the tested antennas include:

Centurion NanoBlue: internal PCB patch, +2dBi omni, micro-coax connection

Pasternack PE51018: external ½ wave whip, +2dBi omni, male SMA

Additional antenna types will be tested for use with RF module as marketing requirements indicate and regulations require.

Photos of the module antenna connection, tested antennas and a typical complete host application are shown in the labeled exhibits attached to the TCB filing.

15.212(a)(1)(v)

*The modular transmitter must be tested in a stand-alone configuration.* The RF module was tested using the BU-200H as a typical host applications. The test setup separated the module from the host using connecting wires. In normal use, the module is mounted on a printed circuit board with the minimum practical connecting trace lengths. Please see exhibit “Test Setup Photos”.

15.212(a)(1)(vi)(A)

*The modular transmitter must be labeled with its own FCC ID number.* Please see exhibit “FCC Module Label” for the FCC ID of this module. Please see exhibit “FCC Application Label” for the FCC ID of host applications containing this module.

15.212(a)(1)(vii)

*The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements.* The 07420307-A-0 is compliant with all applicable FCC rules. Detail instructions for maintaining compliance are given in the Users Manual, attached.

15.212(a)(1)(viii)

*The modular transmitter must comply with any applicable RF exposure requirements.* The EUT is compliant with all applicable RF exposure requirements. The maximum RF output can be no more than 4mW.

15.247(a)(2)

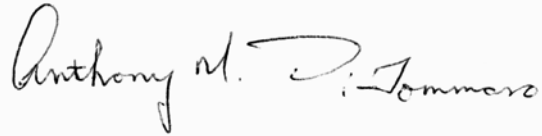
*Operation in the band 2400-2483.5 MHz with a minimum 6dB bandwidth of 500 kHz.* The radio module operates from 2405 MHz to 2480 MHz, inclusive. The transmit bandwidth is 2.8 MHz at 20 dB.

15.247(b)(3)

*The conducted output power for digital modulation must be  $\leq 1W$ .* The conducted output is no more than 4mW.

Please contact me if you have any further questions. Thank you for your attention.

Sincerely,

A handwritten signature in black ink on a light gray background. The signature reads "Anthony M. Di Tommaso" in a cursive, flowing script. The first name "Anthony" is written with a large, looped 'A'. The middle initial "M." is written with a small 'M' followed by a period. The last name "Di Tommaso" is written with a large 'D' and a stylized 'i'.

Anthony M. Di Tommaso  
Manager, Engineering  
Cervis, Inc.