



# Multispectral Solutions

A Zebra Technologies Company

Federal Communications Commission  
7435 Oakland Mills Road  
Columbia, MD 21046

Dear Application Examiner,

Multispectral Solutions, Inc. (MSSI) would like to have your authorization for the Echo Distance Measurement Radio (Echo DMR, MSSI Model Number: ED652-M, FCC ID: QCJECHO108) to be approved as a modular transmitter device to support such applications as ad hoc location and tracking.

The requirements of Public Notice DA00-1407 have been met and shown on the following statements.

1. **“The modular transmitter must have its own RF shielding.”**: The entire module unit is shielded with only an antenna coax connector to interface with the RF output.
2. **“The modular transmitter must have buffered modulation/data inputs.”**: The data packet transmission from the unit is limited to a strict set of function commands provided to its user interface. Data input to the ECHO DMR only excites a limited set of state machines which have a very structured transmission protocols. The device does not support streaming data communication. Its purpose is to measure radio signal propagation as a distance measurement sensor with a structured data packet transmission protocol.
3. **“The modular transmitter must have its own power supply regulation.”**: The transmitter circuitry has no direct connection to input voltage. All voltages of the transmitter and receiver circuitry are to regulated power supplies.
4. **“The modular transmitter must comply with the antenna requirements of section 15.203 and 15.204(C).”**: The antenna and coax connection support non-standard reverse SMA connectors to insure no other antenna can be attached to the unit. The antenna tested is the only antenna available for sale with the unit and the emitter was tested at a fixed and only available power level.
5. **“The modular transmitter must be tested in a stand-alone configuration”**: All submitted testing of the unit were in the stand alone configuration as shown by Met Laboratories documentation.
6. **“The modular transmitter must be labeled with its own FCC ID number.”**: The Echo DMR unit has a unique FCC ID number which will be granted under this submission of QCJECHO108. Further, the user manual on the second page with notes to the user provides the instruction to label the exterior of any equipment that installs the Echo DMR module.
7. **“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 user manual describes the limitations of applications for the transmitter device in which it is certified, FCC 15.250. As such, the documentation lists limitations after the cover page of the user manual. The product note lists that the radio cannot be employed on spacecraft, aircraft or toys, and cannot be mounted on fixed outdoor infrastructure.
8. **“The modular transmitter must comply with any applicable RF exposure requirements.”**: The device was designed to have extremely low emission power in order to meet the specifications of the FCC Part 15.250 rule of peak and average power.

Please contact me if you have any further questions.

Sincerely,

Charles A. Derrow  
For Multispectral Solutions, Inc.