

CAPMD™ TRANSCEIVER

BOX

INTEGRATION MANUAL

First Release				Modification				Revision
Prepared By	Date	Approved by	Control	Checked by:	Date	Approved by	Control	01
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CAUTION: The equipment covered by these instructions should be installed and serviced only by competent personnel utilizing proper safety practice and procedures. These instructions are written for such personnel and are not intended as a substitute for adequate training and experience in safety

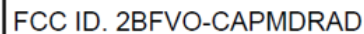
procedures for this type of equipment. These instructions do not purport to cover all details or variations in the equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to GE.

1 INTRODUCTION

GE's CapMD Transceiver box is intended for use only in conjunction with the CapMD Sensor(s) to enhance information about capacitor bank. Once installed and configured, the receiver cabinet gives instant information when energized. It allows remote monitor for each individual capacitor health status such as normal operation, warning or verge of failure and an actual capacitor unit failure.

2 LABEL AND IDENTIFICATION

To identify a transceiver box, look for the FCC ID name plate and the statement "Contains FCC ID"

A rectangular label with a black border and rounded corners, containing the text "FCC ID. 2BFVO-CAPMDRAD" in a black, sans-serif font.

3 OPERATIONAL USE CONDITION

This antenna must be mounted within 300 feet of the associated capacitor bank to ensure reliable communication and signal integrity.

For optimal performance and compliance, the following installation guidelines apply:

- The antenna should be mounted in a location free of large structural obstructions, such as walls, metal frames, or metal shielding, whenever possible.
- Avoid direct exposure to sunlight or other high-temperature sources that may degrade the enclosure or internal components over time.
- The device should be installed at a higher elevation when possible, such as on poles or raised structures, to improve line-of-sight and minimize interference.



Final Installation would look similar above

The installation environment has been predefined and validated to meet all required shielding, antenna, and RF exposure conditions. The module shall not be installed in any host outside of the approved configuration without additional testing and a Class II permissive change. No third-party integrations are permitted under the current certification.

4 ANTENNA SPECS

The following antenna has been tested and approved for use with this device:

- Antenna Type: Dipole
- Connector Type: Compatible with the module's RF connector (e.g., U.FL, SMA)
- Input Impedance: 50 ohms

Operating Bands: 2400-2483.5 MHz

This radio module can only be used in a host for the conditions that it was granted for. To be used in any other way than granted, such as mobile to portable or with another transmitter simultaneously, requires additional evaluation, testing, and a Class 2 permissive change.

This radio module is not designed or certified for use with trace antennas.

5 INSTALLATION INSTRUCTIONS FOR MAINTAINING FCC COMPLIANCE IN HOST SYSTEMS

1. The testing in the host must include but is not limited to spurious emission testing in accordance with the FCC KDB on host integration and requirements for LMA as specified in the FCC KDB Publication 996369.
2. Test modes should take into consideration different operational conditions for a standalone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product. GE Grid Solutions will provide instructions to support the module integrator so that they can properly evaluate the host system with the radio incorporated.
3. Testing such as spurious emission testing and all required radiated emission testing as specified in the FCC KDB shall be done in accordance with ANSI C63.10 and applicable standards.
4. For portable use a SAR test or SAR exclusion evaluation should be completed.
5. It is recommended that the device be installed in accordance with good engineering practices.

Part 15 Subpart B disclaimer: This product incorporates an FCC-certified radio module. Final Subpart B testing must still be performed to ensure compliance for unintentional radiators.

6 LIMITED USE AND COMPLIANCE

This module has been certified as a limited modular transmitter and is intended for integration only within GE Grids Solution's internally controlled host environments. No third-party host integrations are permitted. Any modifications or updates to the certified module configuration will be managed exclusively by GE Grids Solution in accordance with FCC permissive change procedures.

The GE Grid Solutions radio module does not include its own RF shield and power supply regulation. To demonstrate compliance, the module was tested in a configuration that simulated standalone operation as can be seen in the test configuration photographs. The module was powered from header pins

connected to a USB cable which was powered from a USB power adapter. The module was tested according to the test plan described below:

- DTS Bandwidth (6 dB): FCC 15.247(a)(2)
- Output Power: FCC 15.247(b)(3)
- Power Spectral Density: FCC 15.247(e)
- Band Edge Compliance: FCC 15.247(d)
- Spurious Conducted Emissions: FCC 15.247(d)
- AC Power line Conducted emission: FCC 15.207(a)
- Spurious Radiated Emissions: FCC 15.247(d)
- RF Exposure Assessment: FCC 1.1310, 2.1093

Test results demonstrate compliance with FCC Part 15.247 for the module to support integration within the host model: CapMD Ground Receiver Box. Testing for spurious radiated emissions of the module integrated into CapMD Ground Receiver Box has been completed. Test results are available in a separate Part 15 subpart B test report which is available upon request.

The module does not have its own power supply regulation, so to overcome this limitation it must be powered via header pins connected to a dedicated 3.3VDC - 5VDC power source from the host device such as a USB output port from a PC. The module has been tested for power line conducted emissions on a standalone basis and found to be compliant with Part 15.207 requirements. It's emission contributions to the host device is expected to be minimal.

Grantee must submit a Class II Permitted Change for each additional host configuration.

Integration of the radio within a new host product requires testing according to the plan outlined below:

- Conducted Testing:
 - Output Power: FCC 15.247(b)(3)
 - Applicable Channel: low, mid, high channels
 - Applicable Frequency: 2402 MHz, 2440 MHz, 2476.5 MHz
 - Applicable Modulation: GFSK
 - Operation status: Continuous RF transmitting mode
 - Band Edge Compliance: FCC 15.247(d)
 - Applicable Channel: low and high channels
 - Applicable Frequency: 2402 MHz, 2476.5 MHz
 - Applicable Modulation: GFSK
 - Operation status: Continuous RF transmitting mode
- Radiated Testing:
 - Spurious Radiated Emissions: FCC 15.247(d)

- Applicable Channel: low, mid, high channels
- Applicable Frequency: 2402 MHz, 2440 MHz, 2476.5 MHz
- Applicable Modulation: GFSK
- Operation status: Continuous RF transmitting mode

When compliance is demonstrated, a C2PC is required to authorize the integration of the module within the new host product.

7 FCC - ELECTRONIC LABELING GUIDANCE

FCC Statements: This device has been certified under FCC Part 15.247, 15.207, and 15.209. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. **Warning:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: —Reorient or relocate the receiving antenna. —Increase the separation between the equipment and receiver. —Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. —Consult the dealer or an experienced radio/ TV technician for help.

RF Exposure: This equipment complies with FCC RF Exposure requirements and should be installed and operated with a minimum distance of 20cm between the radiator and any part of the human body.

Antenna Info: This equipment is designed to be used only with the antenna(s) provided by the manufacturer **Note:** This radio module is not designed or certified for use with trace antennas.

Modifications: Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

8 SUPPORT CONTACTS

Factory address: GE ITI - 1925 Calumet St, Clearwater, FL 33765

GE GRID SOLUTIONS LLC

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