Modular Integration Instructions GEN4-RFID

Date: 2025-02-27

FCC ID: 2BNP7GEN4RFID

Model Number: GEN4RFID

2.1 Limited Module Procedures

The following instructions are provided to guide manufacturers on how to properly install and integrate this FCC-certified module (GEN4-RFID) into their end products. Failure to follow these instructions may void the module's FCC certification and/or the host product's authorization to operate under FCC rules.

2.2 List of Applicable FCC Rules

This module has been certified for compliance under FCC Part 15, specifically:

- Part 15.225 for 13.56 MHz RFID devices
- FCC Part 15.207 and 15.209 where applicable.

2.3 Specific Operational Use Conditions

The GEN4-RFID device must be stored/operated under the following conditions:

1. **Host Environment:** This module is intended for commercial/industrial host devices that provide proper mechanical and electrical mounting (e.g., antenna PCB, enclosure, power supply).
2. **Minimum Separation Distance (RF Exposure):** A 20 cm separation distance is required between the module's antenna(s) and the user or bystander to ensure compliance with FCC RF exposure limits.
3. **No Co-Location:** The transmitter module may not be co-located with any other transmitter or antenna.
4. **Environmental Conditions:** The module is designed for indoor usage; any outdoor or harsh environment installations require additional protective measures validated by the host integrator.
    1. Operating Temperature: -20°C to +55°C
    2. Storage Temperature: -25°C to +85°C
    3. Humidity: 5% to 80% (no condensation)
5. **Safety:**
    1. GEN4-RFID is an electronic component and must be installed by a trained professional.
    2. Follow general ESD protective measures during the installation of the GEN4-RFID device.

IMPORTANT NOTE: In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2.4 Limited Module Procedures

Not applicable.

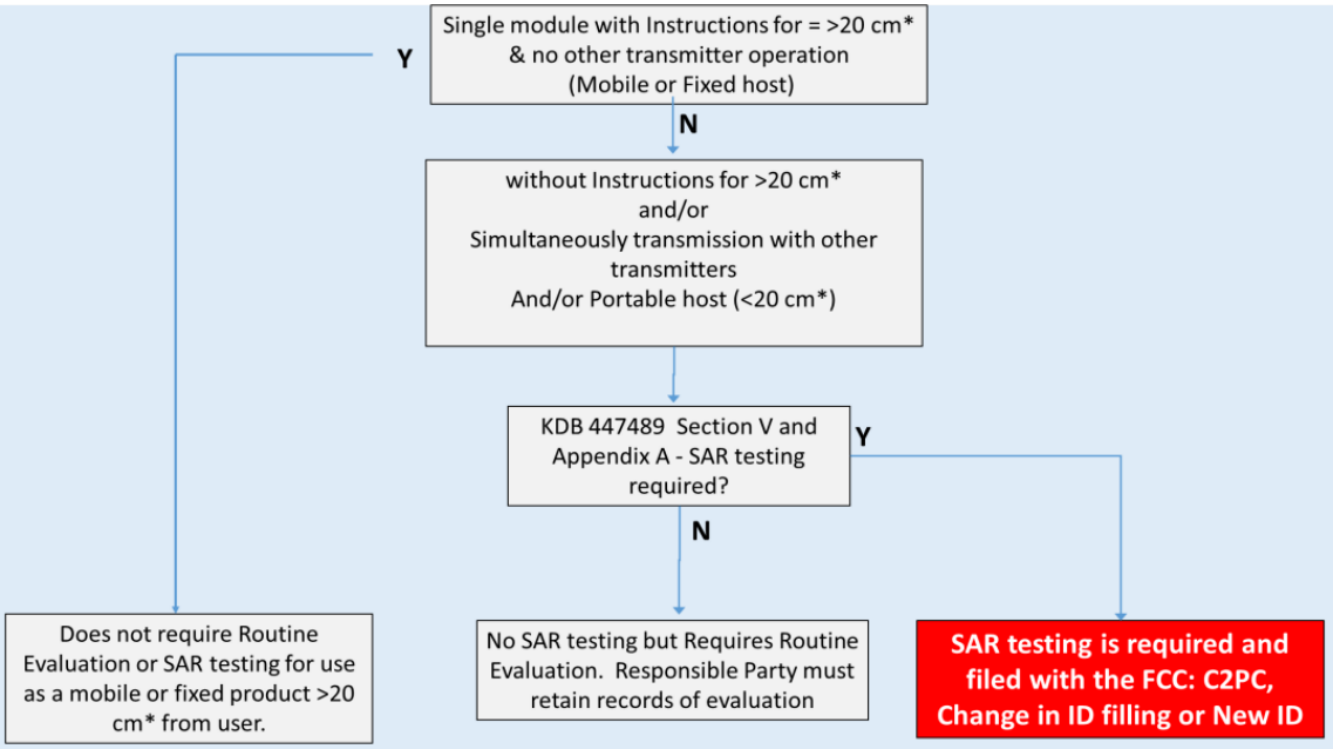
2.5 Trace Antenna Designs

Not applicable.

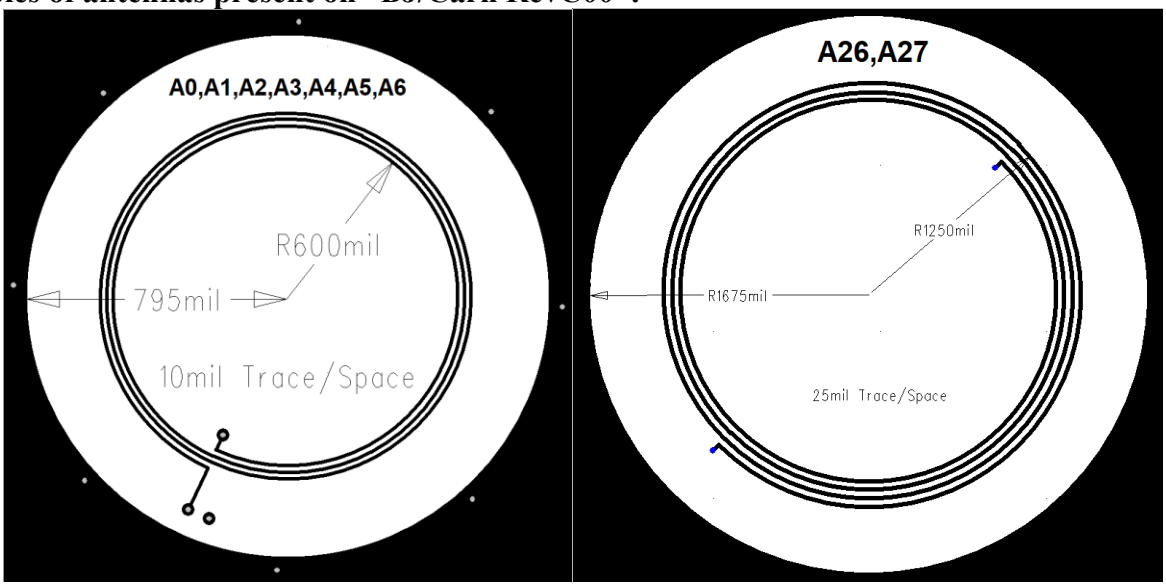
2.6 RF Exposure Considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

If the end-user operating case requires a device to be located in host systems that are installed and operated with a distance less than 20cm between the radiator & people, the host systems need to comply with the requirements in KDB 996369 D03 OEM Manual v01 and KDB 996369 D04 Module Integration Guide v02. Please follow the general RF exposure guidance flow chart below:



2.7. Antennas

1. **Approved Antenna Types:**
   - Shielded PCB Microstrip/Stripline loop or coil antennas specifically designed for 13.56 MHz with VSWR = 1.0–1.5 and Q = 10–30 with a trace length of no more than 20.0”. Specifically, the antennas that are present on the “BJ/Carn RevC00” Seitz & Associates, Inc. antenna model.
2. **Antenna Connection:**
   - The module connects via a 0.1” pitch 62-pin edge connector (P/N: 6364666-1) to the external antenna array.
   - The antenna array must be integrated in accordance with the provided design guidelines, it is recommended that any alterations be confirmed by Seitz & Associates, Inc. additional emissions testing must be conducted to certify any new antennas.
3. **Antenna Impedance Matching:**
   - Host manufacturers must ensure that the 13.56 MHz matching network is not altered in a way that invalidates FCC compliance.
4. **Examples of antennas present on “BJ/Carn RevC00”:**
   - 

2.8. Label and Compliance Information

1. **Module FCC Label:** The module has the FCC ID **2BNP7GEN4RFID** clearly visible on its label.
2. **Host Labeling Requirement:** A host integrating this module must display a visible label (e.g., on the product enclosure) stating: “Contains FCC ID: 2BNP7GEN4RFID” Any similar wording that expresses the same meaning may be used.
3. **User Information:** The host user manual must include the required FCC statements (Part 15.19, 15.21, etc.) and RF exposure guidelines.

2.9 Test Modes and Additional Testing Requirements

Testing of the host product with all transmitters installed (composite investigation test) is recommended to ensure the host product complies with all applicable FCC rules. The radio spectrum must be investigated in the final, fully operational host product configuration to verify that no emissions exceed the highest permissible limits for any individual transmitter, in accordance with Section 2.947(f). It is the host manufacturer's responsibility to ensure that, when the product operates as intended, there are no non-compliant emissions.

The testing should evaluate any emissions that may arise from the interaction of multiple transmitters, digital circuitry, or the physical properties of the host product (e.g., its enclosure). This investigation is particularly important when integrating multiple modular transmitters that were each certified based on stand-alone testing.

1. **Supported Test Modes:**
    - Continuous transmit at 13.56 MHz (for worst-case evaluation).
    - Modulated RFID signals for normal inventory or read/write operations.
    - Ethernet communication active/inactive.
2. **Verification in the Host:**
    - Integrators should confirm the final assembly meets radiated and conducted emission requirements (Part 15, Subpart A) if any digital portion in the host or module is significantly altered.
    - If changes are made to the antenna or layout, additional compliance testing may be needed.

2.10 Additional Testing & Part 15 Subpart A Disclaimer

Any company of the host device which install this modular should perform the test of radiated & conducted emission, spurious emission, etc. according to FCC Part 15. This module’s certification under Part 15.225 does not exempt the host from these separate unintentional radiator requirements.

The host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

2.11 EMI Considerations

The host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties.

2.12 How to Make Changes

This module is a standalone modular transmitter. If the end product involves multiple modules transmitting simultaneously or operates under different conditions in a host, the host manufacturer must consult with the module manufacturer regarding proper installation.

This modular transmitter is only FCC-authorized for the specific rule parts (47CFR Part 15.225) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

Host manufacturer is strongly recommended to confirm compliance with FCC/ISED requirements for the transmitter when the module is installed in the host.

1. **Permissive Change Filings:**
    - Any host modifications that affect RF characteristics (e.g., enclosure changes, additional transmitters, new antennas) may require a Class II or Class III Permissive Change filing with the FCC.
2. **Full vs. Limited Verification:**
    - If integration instructions herein are followed exactly, the module's existing grant remains valid.
    - If the integrator's implementation deviates, the integrator must contact the module grantee (Seitz & Associates, Inc.) to determine if further testing or a new FCC filing is required.

Important: These instructions must be followed to maintain FCC modular approval. Failure to comply may result in the module's FCC certification being voided, requiring the host integrator to pursue a separate FCC equipment authorization. For questions or clarifications, please contact:

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