

Request for Modular/Limited Modular Approval

Date: August 10, 2020

Subject: Manufacturer's Declaration for - Modular Approval - Split Modular Approval
 - Limited Modular Approval - Limited Split Modular Approval

Confidentiality Request for: **2AALY-529GP**

8 Basic Requirements – FCC Part 15.212(a)(1)		
For Items Marked “NO(*)”, the Limited Module Description Must be Filled Out on the Following Pages		
Modular Approval Requirement	Requirement Met	
1. The modular transmitter must have its own RF shielding. This is intended to ensure that the module does not have to rely upon the shielding provided by the device into which it is installed in order for all modular transmitter emissions to comply with FCC limits. It is also intended to prevent coupling between the RF circuitry of the module and any wires or circuits in the device into which the module is installed. Such coupling may result in non-compliant operation. The physical crystal and tuning capacitors may be located external to the shielded radio elements. 15.212(a)(1)(i)	<input checked="" type="checkbox"/> - YES	<input type="checkbox"/> - NO(*)
The modular radio has a Semtech 900MHz LoRa transceiver and a 2.4GHz Laird BL654 (BLE) radio module transceiver. Only the BL654 is under a pre-existing FCC Grant. Both radio solutions have separate and inherent RF shielding to comply with all FCC requirements as a standalone, complete modular radio.		
2. The modular transmitter must have buffered modulation/data inputs (if such inputs are provided) to ensure that the module will comply with FCC requirements under conditions of excessive data rates or over-modulation. 15.212(a)(1)(ii)	<input checked="" type="checkbox"/> - YES	<input type="checkbox"/> - NO(*)
All data connectivity to this radio module are managed and connect to the Laird BL654 radio module. While both radio solutions have buffered I/O to meet the requirement, all host functionality is performed by, and only by, the BL654 radio module.		
3. The modular transmitter must have its own power supply regulation on the module. This is intended to ensure that the module will comply with FCC requirements regardless of the design of the power supplying circuitry in the device into which the module is installed. 15.212(a)(1)(iii)	<input checked="" type="checkbox"/> - YES	<input type="checkbox"/> - NO(*)
Both the Laird BL654 and the Semtech SX1261 implement on-board power supply regulation.		
4. The modular transmitter must comply with the antenna and transmission system requirements of §§ 15.203, 15.204(b), 15.204(c), 15.212(a), and 2.929(b). The antenna must either be permanently attached or employ a “unique” antenna coupler (at all connections between the module and the antenna, including the cable). The “professional installation” provision of § 15.203 is not applicable to modules but can apply to limited modular approvals under paragraph 15.212(b). 15.212(a)(1)(iv)	<input checked="" type="checkbox"/> - YES	<input type="checkbox"/> - NO(*)
The Laird BL654, as its own radio module, has an integrated printed antenna. The 900MHz Lora Semtech SX1261 has its own chip antenna solution on the main carrier PCB. External or alternate antenna configurations are not available within this product as built or filed.		
5. The modular transmitter must be tested in a stand-alone configuration, i.e., the module must not be inside another device during testing. This is intended to demonstrate that the module is capable of complying with Part 15 emission limits regardless of the device into which it is eventually installed. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in Section 15.207. AC or DC power lines and data input/output lines connected to the module must not contain ferrites, unless they will be marketed with the module (see Section 15.27(a)). The length of these lines shall be length typical of actual use or, if that length is unknown, at least 10 centimeters to insure that there is no coupling between the case of the module and supporting equipment. Any accessories, peripherals, or support equipment connected to the module during testing shall be unmodified or commercially available (see Section 15.31(i)).	<input checked="" type="checkbox"/> - YES	<input type="checkbox"/> - NO(*)



15.212(a)(1)(v)

The module, with both radio solutions, was tested stand-alone. This includes both radiated and conducted measurements as exhibited in test setup photographs filed with this application.

Table with 2 main columns: Modular Approval Requirement and Requirement Met. It contains three rows of requirements (6, 7, 8) with checkboxes for YES/NO and explanatory text for each.



Limited Module Description – When Applicable

* If a module does NOT meet one or more of the above 8 requirements, the applicant may request Limited Modular Approval (LMA). This Limited Modular Approval (LMA) is applied with the understanding that the applicant will demonstrate and will retain control over the final installation of the device, such that compliance of the end product is always assured. The operating condition(s) for the LMA; the module is only approved for use when installed in devices produced by grantee. A description regarding how control of the end product, into which the module will be installed, will be maintained by the applicant/manufacturer, such that full compliance of the end product is always ensured should be provided here.

N/A

Software Considerations – KDB 594280 / KDB 442812 (One of the following 2 items must be applied)

Requirement	Requirement Met	
1. For <u>non-Software Defined Radio</u> transmitter modules where software is used to ensure compliance of the device, technical description must be provided about how such control is implemented to ensure prevention of third-party modification; see KDB Publication 594280. The firmware of the device cannot be modified or adjusted by the end user as described in a separate cover letter filed with this application.	<input checked="" type="checkbox"/> - Provided in Separate Cover Letter	<input type="checkbox"/> - N/A
2. For <u>Software Defined Radio (SDR)</u> devices, transmitter module applications must provide a software security description; see KDB Publication 442812.	<input type="checkbox"/> - Provided in Separate Cover Letter	<input checked="" type="checkbox"/> - N/A

N/A

Split Modular Requirements

Requirement	Provided in Manual	
1. For split modular transmitters, specific descriptions for secure communications between front-end and control sections, including authentication and restrictions on third-party modifications; also, instructions to third-party integrators on how control is maintained.	<input type="checkbox"/> - Provided in Separate Cover Letter	<input checked="" type="checkbox"/> - N/A

N/A



OEM Integration Manual Guidance – KDB 996369 D03 Section 2

Clear and Specific Instructions Describing the Conditions, Limitations, and Procedures for third-parties to use and/or integrate the module into a host device.

Requirement		
Is this module intended for sale to third parties?	<input type="checkbox"/> - YES	<input checked="" type="checkbox"/> - No, If No, and LMA applies, the applicant can optionally choose to not make the following detailed info public. However there still needs to be basic integration instructions for a users manual and the information below must still be included in the operational description. <u>If the applicant wishes to keep this info confidential, this will require a separate statement cover letter explaining the module is not for sale to third parties and that integration instructions are internal confidential documents.</u>
<p style="text-align: center;">Items required to be in the manual – See KDB 996369 D03, Section 2</p> <p>As of May 1, 2019, the FCC requires ALL the following information to be in the installation manual. Modular transmitter applicants should include information in their instructions for all these items indicating clearly when they are not applicable. For example information on trace antenna design could indicate “Not Applicable”. Also if a module is limited to only a grantees own products and not intended for sale to third parties, the user instructions may not need to be detailed and the following items can be placed in the operational description, but this should include a cover letter as cited above.</p>		
1. List of applicable FCC rules. KDB 996369 D03, Section 2.2 a. Only list rules related to the transmitter.	<input type="checkbox"/> - All Items shown to the left are provided in the Modular Integration Guide (or UM) for Full Modular Approval (MA) or LMA. <input checked="" type="checkbox"/> - An LMA applies <u>and is approved ONLY for use by the grantee in their own products</u> , and not intended for sale to 3 rd parties as provided in a separate cover letter. Therefore the information shown to the left is found in the theory of operation.	
2. Summarize the specific operational use conditions. KDB 996369 D03, Section 2.3 a. Conditions such as limits on antennas, cable loss, reduction of power for point to point systems, professional installation info		
3. Limited Module Procedures. KDB 996369 D03, Section 2.4 a. Describe alternative means that the grantee uses to verify the host meets the necessary limiting conditions b. When RF exposure evaluation is necessary, state how control will be maintained such that compliance is ensured, such as Class II for new hosts, etc.		
4. Trace antenna designs. KDB 996369 D03, Section 2.5 a. Layout of trace design, parts list, antenna, connectors, isolation requirements, tests for design verification, and production test procedures for ensuring compliance. If confidential, the method used to keep confidential must be identified and information provided in the operational description.		
5. RF exposure considerations. KDB 996369 D03, Section 2.6 a. Clearly and explicitly state conditions that allow host manufacturers to use the module. Two types of instructions are necessary: first to the host manufacturer to define conditions (mobile, portable – xx cm from body) and second additional text needed to be provided to the end user in the host product manuals.		
6. Antennas. KDB 996369 D03, Section 2.7 a. List of antennas included in the application and all applicable professional installer instructions when applicable. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc – note that “omni-directional” is not considered a type)		
7. Label and compliance information. KDB 996369 D03, Section 2.8 a. Advice to host integrators that they need to provide a physical or e-label stating “Contains FCC ID: “ with their finished product		
8. Information on test modes and additional testing requirements. KDB 996369 D03, Section 2.9 a. Test modes that should be taken into consideration by host integrators including clarifications necessary for stand-alone and simultaneous configurations. b. Provide information on how to configure test modes for evaluation		
9. Additional testing, Part 15 Subpart B disclaimer. KDB 996369 D03, Section 2.10		



Georgia-Pacific

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404-652-7309

Sincerely,

By: _____ *Tiffany Wade* _____ Tiffany Wade _____
(Signature/Title¹) (Print name)

¹ - Must be signed by applicant contact given for applicant on the FCC site, or by the authorized agent if an appropriate authorized agent letter has been provided. Letters should be placed on appropriate letterhead.