



Cisco Systems, Inc.

## Modular Approval Letter

11/30/2022

FEDERAL COMMUNICATIONS COMMISSIONS

Authorization and Evaluation Division

7435 Oakland Mills Road

Columbia, MD 21046

Subject: Modular Approval Letter

The Device, FCC ID: LDK-LPWA900, is seeking FCC authorization as a modular transmitter. The EUT meets the requirement for modular approval as detailed in FCC Public Notice DA 00-1407. Compliance to each of the requirements is described below:

1. The modular transmitter must have its own RF shielding. The shield is located on the top side of the PCB enclosing the radio chipsets, TCXO, and radio front-end components. This is a two-piece shield made of a fence that is soldered onto the PCB and a lid which snaps on top of the fence. The shield fence is made of low-carbon cold rolled steel plated with tin. The shield lid is stainless steel with no finish.
2. The modular transmitter must have buffered modulation/data inputs. Modulation is performed by the SX1303 baseband chipset (schematic reference designator U7). Data is buffered by the STM32 microcontroller (U2), which converts data received on its USB interface to serial data sent to the baseband chipset on its SPI interface. The SPI interface operates on a 32 MHz clock (Y1) and cannot be overdriven.
3. The modular transmitter must have its own power supply regulator. The module takes a +12 VDC input from the host. The module includes a DC-DC regulator which converts the 12 V input to 5 VDC (U1\_M1). From the 5 V rail, LDO regulators generate the 3.3 VDC rails that supply the radio circuitry (U21 and U22).

4. The modular transmitter must comply with the antenna requirement of section 15.203 and 15.204(c)

The module connects to its antenna via a standard SMA connector and optional coaxial cables. The list of supported antennas are as follows:

Antenna	Description	Peak Gain (dBi)	Mounting Style
ANT-LPWA-SMA-D	Dipole, omnidirectional, indoor, swivel-mount, 863 – 928 MHz, SMA(m) connector	0.9	Direct mount to module's SMA(f) connector
ANT-WPAN-OD-OUT-N	Dipole, omnidirectional, outdoor, 863 – 928 MHz, N(m) connector	1.5	Mount to bulkhead N(f)
ANT-LPWA-DB-O-N-5	Collinear dipole array, omnidirectional, outdoor, 863 – 928 MHz, N(f) connector	5.6	Pole/mast mount

5. The modular transmitter must be tested in a stand-alone configuration

*Test data contained in this application is for the device tested in a stand-alone configuration. Radiated spurious emissions data and AC conducted emissions data demonstrating compliance with the requirements of Part 15 of the FCC rules for intentional radiators and RSS GEN has been provided.*

6. The modular transmitter must be labeled with its own FCC ID number

The module is appropriately labeled (refer to the label and label location drawings contained within this application). Instructions to the end user regarding the labeling requirements for host devices are included in this application. P-LPWA-900 will be marketed and shipped independently of the host devices

7. The modular transmitter must comply with any specific rule or operating requirements and the manufacturer must provide adequate instruction along with the module to explain any such requirements

*The module complies with the specific rules and operating requirements for which certification is sought. Instructions to the OEM installer or end user regarding such requirements for use in host devices are included in this application.*

8. The modular transmitter must comply with any applicable RF exposure requirements

*The module meets the requirements for a mobile device that may be used at separation distances of more than 35cm from the human body. Refer to the MPE calculation.*

By: 

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On behalf of: Cisco Systems, Inc.

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