



JNET1 User Manual

General description

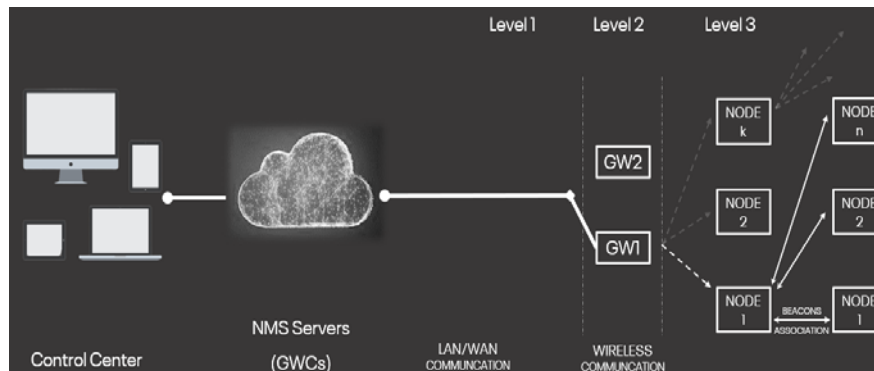
Juganu's Medium bandwidth Network-on-lights, the JNET1©, provides an easy to deploy, highly reliable, secure, flexible, dynamic and intelligent connectivity infrastructure.

The GPS Card fills two roles: to provide location of the node, and provide an accurate time.

The JNET1 Card acts as JNET1© network components that together with other JNET-1 Luminaries Wireless Controlles create an autonomous self-management scalable Luminaries network. The network is designed to control and manage up to hundreds of thousands of lights in the modern city complicated environment.

The JNET1© network use a proprietary network protocol, using 902-928 MHz sub-Giga unlicensed spectrum.

The Figure below depicts the basic JNET1© network architecture.



Network Creation

Each JNET1 Node is a network member. By using the JNET1 Card resources (software, CPU and its transceivers) a JNET1© network is automatically created.

The network demonstrates two significant capabilities:

- Self-Healing for finding the fastest and most reliable paths to send data.
- Self-Improvement for detecting poor inter Node radio links (noisy or busy channels) and selects alternative nodes/ Channels to keep communication integrity.



Maintenance and Deployment

Easy deployment - The self-configuring network automatically accepts a new node into the existing structure without any need in adjustments by a network administrator.

The network is easy to install and uninstall – it doesn't need any pre-installation design or installation planning in order to be stable and operate.

Specification Highlights

- Frequency Range 903-927 MHz
- 500 kbps
- Effective Data Throughput 200 kbps
- Transmitter Output Up to 14 dBm
- Receiver Sensitivity -95 dBm for 1% PER (data rate of 200 kbps)
- Spreading Technique Frequency agility 2GFSK
- Inter Node Communication- Juganu proprietary
- Addressing Paradigm JNET is a source-routing tree solution employs a proprietary MAC address paradigm
- Wireless Network Security Counter Mode Cipher Block Chaining Message Authentication Code Protocol over AES128, Pre-Shared Key.
- Operating Temperature -40°C to +55°C
- Humidity 95% non-condensing
- Power Connection 12V DC through Connector on board J6.



OEM Integrators Notices

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

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 or authorization.

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrate this module.

The user's manual for OEM integrators must include the following information in a prominent location:

"IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."



FCC statements

This device complies with Part 15 of the FCC Rules. Operation is subject to two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference that may be received or that may cause undesired operation.

NOTE: 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.

WARNING! To comply with FCC RF exposure compliance requirements, the device should be located at a distance of at least 20 cm from all persons during normal operation. The antennas used for this product must not be co-located or operated in conjunction with any other antenna or transmitter.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance (Juganu Ltd.) could void the user's authority to operate the equipment.