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Project Name	INT NODE HP MAHA			Checked by	
Subject	INT NODE HP MAHA Product Specification			Approved by	

Product Specification

INT NODE HP MAHA

2025. 05. 10

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1. Summary

It defines the part of the circuit INT NODE HP MAHA

2. Product Specification

2.1 Electrical Specification

Type No.	Description
Input Voltage	DC 12V
Power consumption	< 2.5W Max. (Typ. 0.3W)
Protocol	IEEE 802.15.4 / Zigbee Pro
Frequency	2.4 GHz (ISM band: International) / 2405MHz ~ 2480 MHz, (16 Channel)
RF Tx Power	Max. -3 dBm
RF Rx sensitivity	-96dBm
Data rate	250kbps
Dim interface	PWM
ADC Input Level	0 ~ 1.5V
Interface	UART1 (Debug & Download)
Dimensions (W x L)	76.0 x 51.0 mm
Antenna	IFA, Gain 2.0dBi
Modulation	DSSS-OQPSK(Zigbee)
Max target Power	-2 dBm

2.2 Environmental Specification

Item	Specification
Operating Temp. Range	-30°C ~ +70°C /IEC 60068-2-1 Ab
Storage Temp. Range	-40°C ~ +70°C /IEC 60068-2-2 Bb
Operating Humidity	5% ~ 95% (No dew condensation) / IEC 60068-2-56

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FCC Instructions

FCC Compliance Statement(Part 15.19 (3))

This device complies with part 15 of the FCC rules. 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.

FCC Interference Statement(Part 15.105)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement (Part 2.1091)

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

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IC

Industry Canada Statement

This device complies with RSS-247 of the Industry Canada Rules. 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. Ce dispositif est conforme à la norme CNR-247 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Industry Canada Radiation Exposure Statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Déclaration d'exposition aux radiations

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

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<Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual v01>

List of applicable FCC rules

This module has been granted modular approval as below listed FCC rule parts.

-FCC Rule parts 15C (15.247)

Summarize the specific operational use conditions

-The OEM integrator should use equivalent antennas which is the same type and equal or less gain than an antenna listed in 2.7 in this instruction manual.

RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following condition:

-The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained

between the radiator (antenna) and all persons at all times.

-The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

-Mobile use

As long as the three conditions above are met, further transmitter testing will not be required.

OEM integrators should provide the minimum separation distance to end users in their end-product manuals.

Antenna list

This module is certified with the following integrated antenna.

Antenna Type	Antenna Model	Gain(dBi)
		2405MHz ~ 2480MHz
IFA Antenna	MAHA300	2. dBi

Any new antenna type, higher gain than listed antenna should be met the requirements of FCC rule 15.203 and 2.1043 as permissive change procedure.

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Label and compliance information End Product Labeling

The module is labeled with its own FCC ID and IC Certification Number. If the FCC ID and IC Certification Number are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following:

"Contains FCC ID: 2BMIG-INTNODEHPM" "Contains IC: 33375-INTNODEHPM"

Information on test modes and additional testing requirements

-OEM integrator is still responsible for testing their end-product for any additional compliance requirements

required with this module installed (for example, digital device emissions, PC peripheral requirements, additional transmitter in the host, etc.).

Additional testing, Part 15 Subpart B disclaimer

-The final host product also requires Part 15 subpart B compliance testing with the modular transmitter installed to be properly authorized for operation as a Part 15 digital device.