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RUN mXTEND™ (NN02-224)

DATASHEET

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The RUN mXTEND™ cellular embedded **IoT antenna** is an example of the new generation of tiny antenna boosters available for multiband connectivity. The miniature antenna booster is connected to the RF transceiver through a matching network that shapes the frequency response of the wireless platform such as **2G, 3G, 4G** bands, but also for other regions of the spectrum for example **GNSS and Bluetooth**.

Product Benefits

- **Top performance**: Top multiband IoT performance in a ultracompact form factor: 12.0 mm x 3.0 mm x 2.4 mm.
- **Multiband & Multiport:** 2G/3G/4G/5G, LTE-M and NB-IoT applications
- **Global reach:** Through multiband performance (compatible with multiple regional standards).
- **Reliability**: Off-the-Shelf standard product, no antenna part customization (electronic optimization).
- **Use cases:** Small tracking devices, IoT sensors and IoT cellular/ISM modules, mobile devices.

Operation Bands Summary

- GSM, UMTS, 4G, GNSS, Bluetooth, Wi-Fi Dual Band (824 – 960MHz, 1710 – 2690MHz, 1561 – 1606MHz, 2400 – 2500MHz and 4900 – 5875MHz)

1. AVAILABLE SOLUTIONS SUMMARY

Class	Frequency Regions	Frequency range	More detailed info
1 Port	2	824 – 960 MHz & 1710 – 2690 MHz	CELLULAR LTE
1 Port	1	863 – 928 MHz	ISM
1 Port	2	863 – 928 MHz & 2400 – 2500MHz	ISM + BLUETOOTH
1 Port	3	1561 MHz, 1575 MHz & 1598 – 1606 MHz	GNSS
1 Port	1	2400 – 2500MHz	BLUETOOTH
1 Port	2	2400 – 2500MHz & 4900 – 5875MHz	Wi-Fi DUAL BAND

2. DETAILED AVAILABLE SOLUTIONS

2.1. LTE SOLUTION

Technical features	824 – 960 MHz	1710 – 2690 MHz
Average Efficiency	> 65 %	> 70 %
Peak Gain	1.8 dBi	1.9 dBi
VSWR	< 3:1	
Radiation Pattern	Omnidirectional	
Polarization	Linear	
Weight (approx.)	0.19 g	
Temperature	-40 to + 125 ºC	
Impedance	50 Ω	
Dimensions (L x W x H)	12.0 mm x 3.0 mm x 2.4 mm	

Technical features. Measures from the evaluation board (131 mm x 60 mm x 1 mm).

2.2 ISM SOLUTION

Technical features	863 – 870 MHz	902 – 928 MHz	863 – 928 MHz
Average Efficiency	> 85 %	> 85 %	> 85 %
Peak Gain	2.1 dBi	2.1 dBi	2.2 dBi
VSWR	< 2:1	< 2:1	< 2:1
Radiation Pattern	Omnidirectional		
Polarization	Linear		
Weight (approx.)	0.19 g		
Temperature	-40 to +125 ºC		
Impedance	50 Ω		
Dimensions (L x W x H)	12.0 mm x 3.0 mm x 2.4 mm		

Technical features. Measures from the evaluation board with UFL cables (131 mm x 60 mm x 1 mm).

2.3 GNSS SOLUTION

Technical features	1561 MHz	1575 MHz	1598 – 1606 MHz
Average Efficiency	> 75 %	> 75 %	> 80 %
Peak Gain	2.9 dBi	3.0 dBi	3.3 dBi
VSWR	< 1.5:1		
Radiation Pattern	Omnidirectional		
Polarization	Linear		
Weight (approx.)	0.19 g		
Temperature	-40 to +125 ºC		
Impedance	50 Ω		
Dimensions (L x W x H)	12.0 mm x 3.0 mm x 2.4 mm		

Technical features. Measures from the evaluation board with UFL cables (126.5 mm x 60 mm x 1 mm).

2.4 BLUETOOTH SOLUTION

Technical features	2400 – 2500MHz
Average Efficiency	> 75%
Peak Gain	4.2 dBi
VSWR	< 1.5:1
Radiation Pattern	Omnidirectional
Polarization	Linear
Weight (approx.)	0.19 g
Temperature	-40 to +125 ºC
Impedance	50 Ω
Dimensions (L x W x H)	12.0 mm x 3.0 mm x 2.4 mm

Technical features. Measures from the evaluation board with UFL cables (126.5 mm x 60 mm x 1 mm).

2.5 Wi-Fi-DUAL BAND SOLUTION

Technical features	2400 – 2500 MHz	4900 – 5875 MHz
Average Efficiency	> 70 %	> 70 %
Peak Gain	2.9 dBi	3.1 dBi
VSWR	< 2.5:1	
Radiation Pattern	Omnidirectional	
Polarization	Linear	
Weight (approx.)	0.19 g	
Temperature	-40 to + 125 ºC	
Impedance	50 Ω	
Dimensions (L x W x H)	12.0 mm x 3.0 mm x 2.4 mm	

Technical features. Measures from the evaluation board with a coplanar grounded transmission line (126.5 mm x 60 mm x 1 mm).

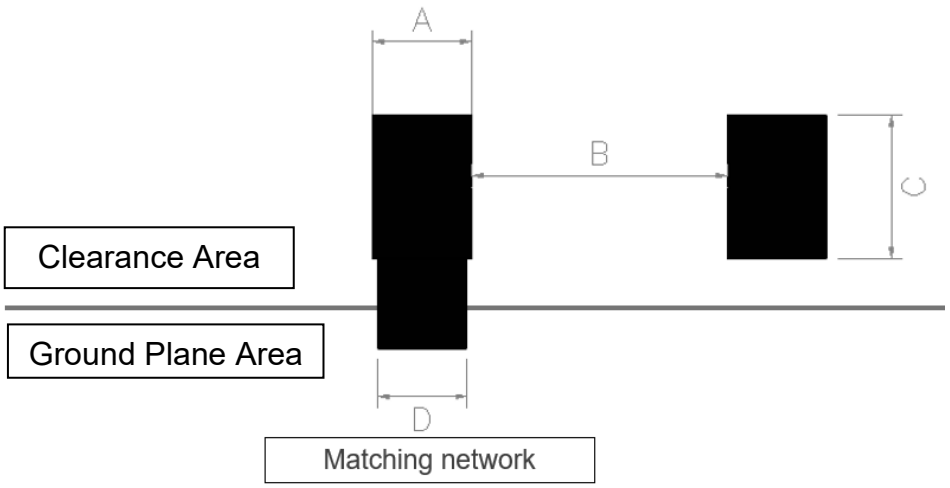
2.6 ISM + BLUETOOTH SOLUTION

Technical features	863 – 870 MHz	902 – 928 MHz	863 – 928 MHz
Average Efficiency	> 75 %	> 75 %	> 75 %
Peak Gain	1.4 dBi	1.6 dBi	1.6 dBi
VSWR	< 2:1	< 2:1	< 2:1
Radiation Pattern	Omnidirectional		
Polarization	Linear		
Weight (approx.)	0.19 g		
Temperature	-40 to +125 ºC		
Impedance	50 Ω		
Dimensions (L x W x H)	12.0 mm x 3.0 mm x 2.4 mm		

Technical features	2400 – 2500MHz
Average Efficiency	> 80 %
Peak Gain	2.9 dBi
VSWR	< 2:1
Radiation Pattern	Omnidirectional
Polarization	Linear
Weight (approx.)	0.19 g
Temperature	-40 to +125 ºC
Impedance	50 Ω
Dimensions (L x W x H)	12.0 mm x 3.0 mm x 2.4 mm

Technical features. Measures from the evaluation board with UFL cables (131 mm x 60 mm x 1 mm).

2.7 ANTENNA FOOTPRINT



Measure	mm
A	2.2
B	7.8
C	3.2
D	2.0

Tolerance: ±0.2 mm

Footprint dimensions for the single booster.

If you need assistance to design your matching network beyond this application note, please contact support@ignion.io, or if you are designing a **different device size** or a **different frequency band**, **we can assist you** in less than 24 hours. Please, try our free-of-charge[1] Antenna Intelligence Cloud, which will get you a complete design report including a custom matching network for your device in 24h[1]. Additional information related to Ignion's range of R&D services is available at: https://ignion.io/rdservices/

[1] See terms and conditions for a free Antenna Intelligence Cloud service in 24h at: https://www.ignion.io/antenna-intelligence/

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