



# Inventek Systems

Embedding Connectivity Everywhere

## ISM14585-L35 BLE 5.0 SiP **B24P-W w.fl External Antenna**

### Preliminary Data Sheet



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# 1 PART NUMBER DETAIL DESCRIPTION

## 1.1 Ordering Information

Device	Description	Standard Ordering Number
B24P-W w.fl External Antenna	100mm w.fl External Antenna for the Inventek ISM14585 BLE Module	B24P-W

## 2 OVERVIEW

The Inventek **B24P-W** w.fl External Antenna enables customers to use the Inventek ISM14585 BLE 5.0 Module with an external antenna configuration. The B24P-W w.fl antenna is a polymer substrate antenna. The **B24P-W** w.fl External Antenna supports 2400MHz – 2500MHz frequencies.

## 3 FEATURES

- **B24P-W** w.fl Dimensions: 30 x 5.0 x 0.5 (mm)
- **B24P-W** w.fl Length: 100 mm
- **B24P-W** w.fl coaxial cable: 0.81 mm OD

### 3.1 Feature Highlights:

- Frequency Band: 2400MHz – 2500MHz frequencies
- Stable and reliable in performances
- Compact size
- RoHS compliance

### 3.2 Application Examples

- Industrial, Consumer, Medical, etc.
- Voice-controlled remote controls
- Beacons
- (Multi-sensor) Wearable devices
  - Fitness trackers
  - Consumer health
- Smartwatches
- Human interface devices
  - Keyboard
  - Mouse

## 4 DESCRIPTION

- The Inventek **B24P-W** w.fl External Antenna is specially designed for 2.4GHz applications. Based on Inventek’s proprietary design and processes, this PCB antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.
- The Inventek **B24P-W** w.fl External Antenna is utilized for the Inventek **ISM14585-L35** BLE 5.0 Module and the Inventek **ISM14585-L35-EVB** Evaluation Board. Please reference the Inventek **ISM14585-L35** BLE 5.0 Module Data Sheet and the Inventek **ISM14585-L35-EVB** Evaluation Board User’s Manual for additional information.
- Required Antenna Placement for the Inventek **B24P-W** w.fl External Antenna is tuned on a **1.6mm thick FR-PC material plastic**.

## 5 ISM14585-L35 SoC & SiP BLOCK DIAGRAMS

### 5.1 DIALOG DA14585 Radio w/Audio I/F SoC

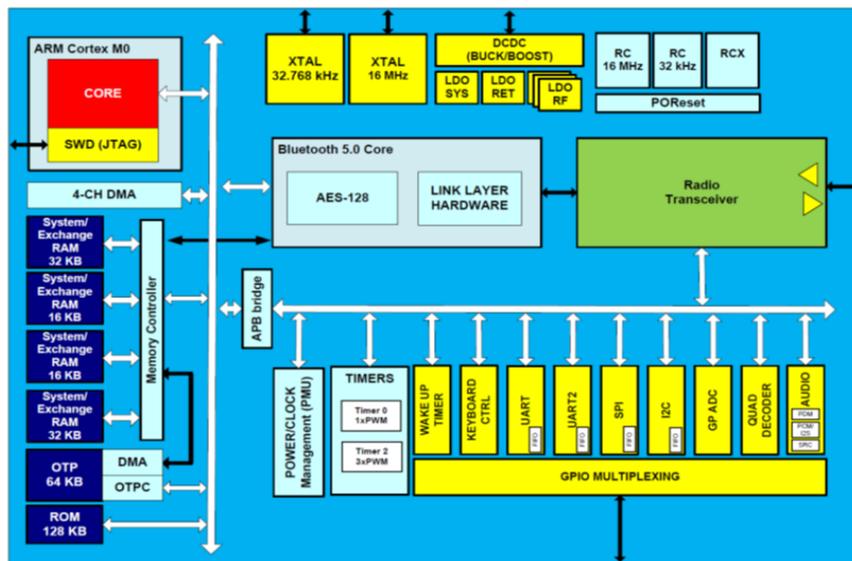
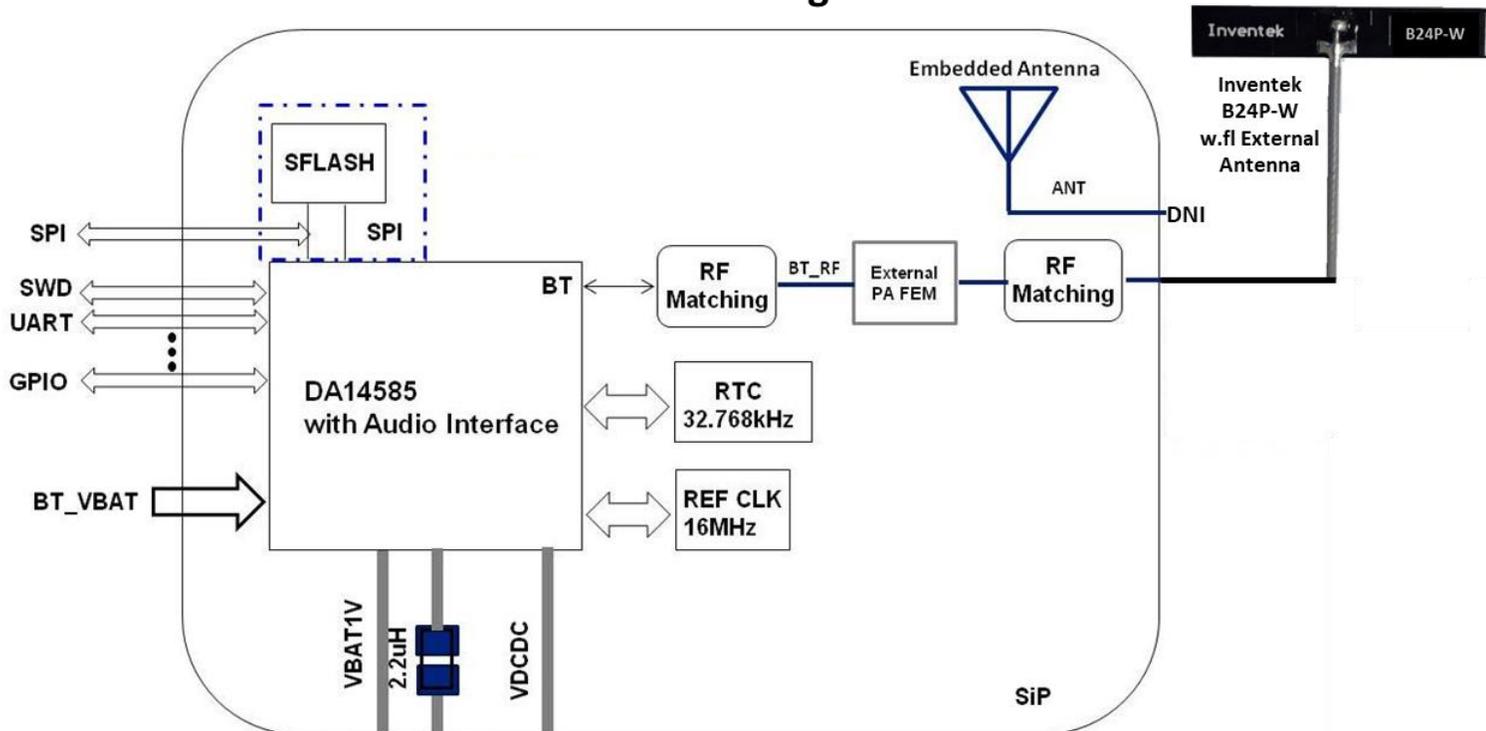


Figure 1 Dialog DA14585 SoC Block Diagram

## 5.2 INVENTEK ISM14585-L35 SiP Module & B24P-W w.fl Antenna

### External Antenna Configuration



Power Mode: The ISM14585 module is configured for Buck mode only and the "Switch" Pin requires the Synchronous DC-DC converter to be configured for 3.3V or higher.

Figure 2 Inventek ISM14585-L35 SiP Block Diagram

- UART Universal synchronous/asynchronous receiver transmitters
- SPI Serial Peripheral Interface
- I2C Inter-Integrated Circuit
- GPIO General-purpose input/output
- SWD Serial Wire Debug

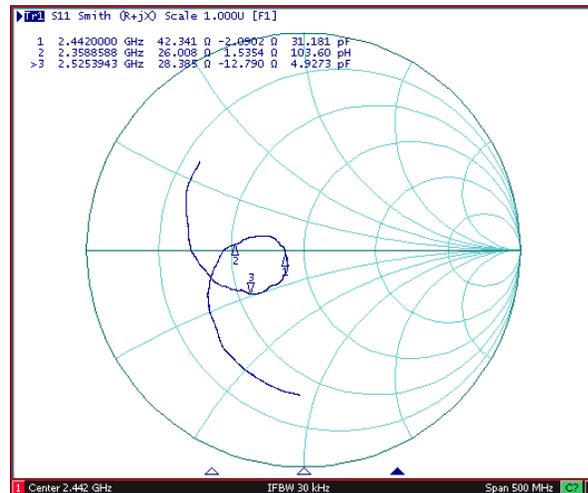
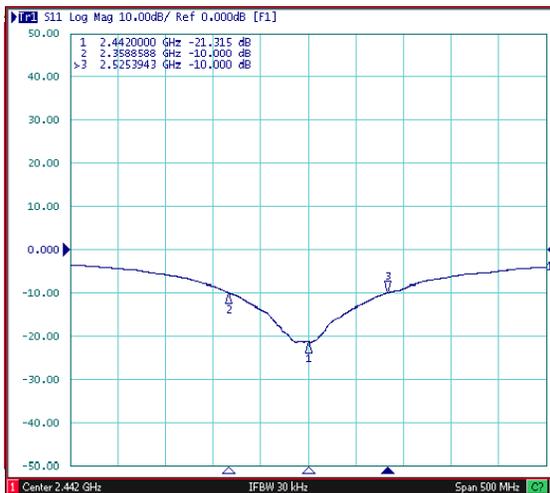
## 6 Electrical Specification

Characteristics		Specifications	Unit
Outline Dimensions		30 x 5.0 x 0.5	mm
Center Frequency		2442	MHz
Bandwidth		100 Min	MHz
VSWR		2max	
Impedance		50	$\Omega$
Polarization		Linear Polarization	
Gain	Peak Gain	3.2 (typical)	dBi
	Efficiency	79 (typical)	%

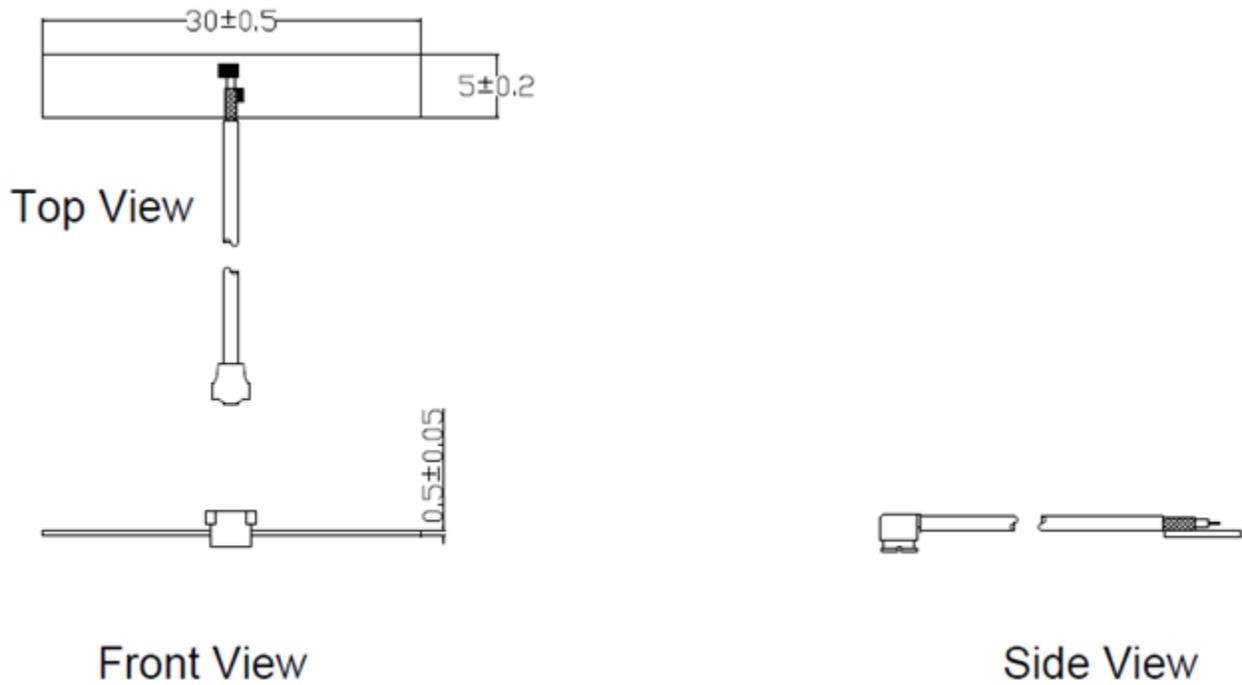
### 6.1 Return Loss & Smith Chart

Return Loss (S11)

Smith Chart(S11)



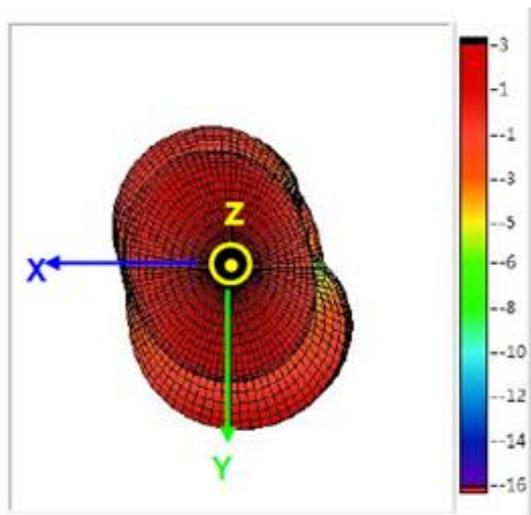
## 7 Antenna Dimensions (unit: mm)

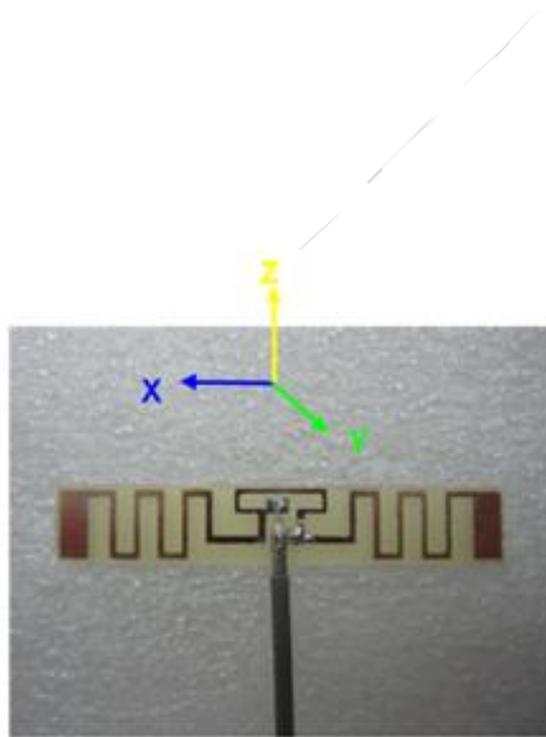
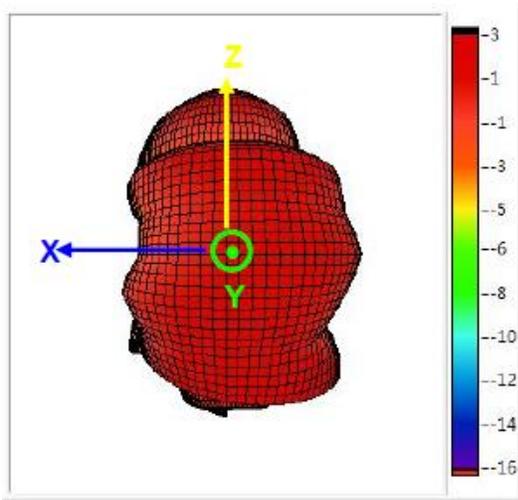
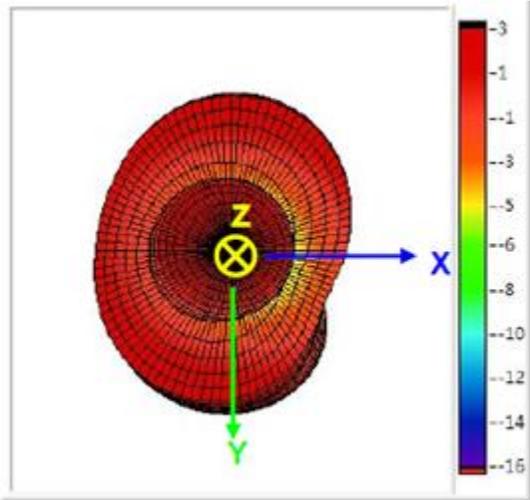


Unit:mm

## 8 Radiation Pattern

### 8.1 3D Gain Pattern (Radiation Pattern at 2442 MHz)

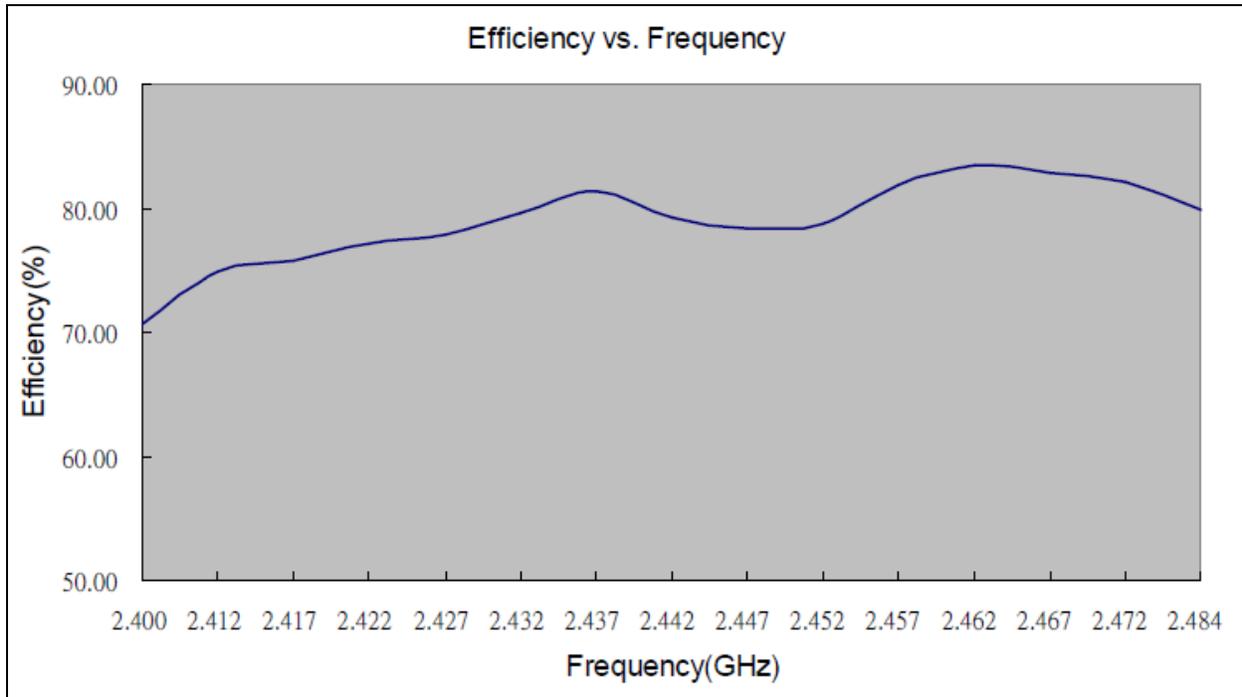




## 8.2 Efficiency Table

Frequency (MHz)	2.400	2.412	2.417	2.422	2.427	2.432	2.437	2.442	2.447	2.452	2.457	2.462	2.467	2.472	2.484
Efficiency (dB)	-1.51	-1.26	-1.21	-1.13	-1.09	-0.99	-0.90	-1.01	-1.06	-1.04	-0.87	-0.79	-0.82	-0.86	-0.98
Efficiency (%)	70.63	74.82	75.68	77.09	77.80	79.62	81.28	79.25	78.34	78.70	81.85	83.37	82.79	82.04	79.80
Gain (dBi)	2.76	2.96	3.02	3.05	3.15	3.24	3.32	3.26	3.23	3.26	3.42	3.55	3.56	3.58	3.48

### 8.3 Efficiency vs. Frequency



## 9 REVISION CONTROL

Document: <b>B24P-W</b>	w.fl External Antenna for the ISM14585-L35 BLE 5.0 Module
External Release	DOC-DS-B24P-W-1.0

Date	Author	Revision	Comment
8/10/2018	AS	1.0	Preliminary

## 10 CONTACT INFORMATION

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