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## SPECIFICATION Penta-band Cabled Embedded PCB <br> Adhesive Mount Antenna

Part No. : PC104.07.0165C

Product Name : Penta-Band PCB Antenna

Feature : GSM / CDMA /DCS /PCS / WCDMA / UMTS /
HSDPA / GPRS / EDGE
850/900/1800/1900/2100 MHz bands
High Efficiency
164.9 mm Ф1.37 coaxial cable with IPEX
connector
$80 \mathrm{~mm} * 20.8 \mathrm{~mm} * 1 \mathrm{~mm}$
Low profile
With 3M adhesive, easy stick on client enclosure
RoHS Compliant


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## 1.Introduction

The high efficiency PC104 Penta-band PCB antenna's slim-line design allows for convenient installation inside the customer device. Omni-directional gain across all bands ensures constant reception and transmission.

With its unique dipole design, the PC104 has exceptional industry performance characteristics considering its very low profile at 2.4 mm and has a compact size $80 \mathrm{~mm} * 20 \mathrm{~mm}$. It is suitable for clients that appreciate highest performance with lower price.

This antenna has 3M adhesive on the back, and is tuned and designed to be mounted on 2 mm thickness plastic (not on metal). Cable lengths and connectors are fully customizable. However for good efficiency performance the shortest cable length should not be less than 100mm, for requirements with shorter cable lengths the alternative product the FXP. 14 can be used.

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## 2.Specification Table

| GSM Band |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | GSM 850 | GSM 900 | DCS | PCS | WCDMA I |
| Frequency ( MHz ) | 824~896 | 880~960 | 1710~1880 | 1850~1990 | 1920~2170 |
| Peak Gain (dBi)* | 0.77 | 0.99 | 2.26 | 2.13 | 2.39 |
| Average Gain (dBi)* | -3.26 | -2.92 | -1.32 | -1.59 | -1.52 |
| Efficiency (\%)* | 47 | 51 | 73 | 69 | 70 |
| Return Loss (dB)* | $<-7$ | $<-5$ | $<-10$ | $<-10$ | $<-10$ |
| Polarization | Linear |  |  |  |  |
| Impedance | $50 \Omega$ |  |  |  |  |
| MECHANICAL |  |  |  |  |  |
| Antenna Dimensions | $80 \mathrm{~mm} \times 20 \mathrm{~mm} \times 1 \mathrm{~mm}$ |  |  |  |  |
| Material | FR4 |  |  |  |  |
| Cable type | Ф1.37 Coaxial Cable |  |  |  |  |
| Cable length | 164.9 mm |  |  |  |  |
| Connector type | IPEX |  |  |  |  |
| Adhesive | 3M 467 |  |  |  |  |
| ENVIRONMENTAL |  |  |  |  |  |
| Operation Temperature | $-40^{\circ} \mathrm{C} \sim+85^{\circ} \mathrm{C}$ |  |  |  |  |
| Storage Temperature | $-40^{\circ} \mathrm{C} \sim+85^{\circ} \mathrm{C}$ |  |  |  |  |

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## 3. Antenna Characteristics

### 3.1. Return Loss


3.2. Maximum Gain


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### 3.3. Average Gain



### 3.4. Efficiency



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## 4. Antenna Radiation Patterns

Antenna setup in 3D Anechoic chamber


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## Radiation Patterns

XY plane



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XZ plane


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## 5. Drawing



|  | Name | P/N | Material | Finish | QTY |
| :---: | :--- | :--- | :--- | :--- | :---: |
| 1 | PC104 PCB | 100212K0100XXA | FR4 1t | Black | 1 |
| 2 | 1.37 Coaxial Cable | OD.137.AD | FEP | Black | 1 |
| 3 | IPEX MHFI | IPEX.MHFHT.137 | Brass | Gold | 1 |
| 4 | Heat Shrink Tube | 001312E000002A | PE | Black | 1 |
| 5 | 3M Adhesive | 001012 K0000XXA | 3M 9448 | N/A | 1 |

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## 6. Application Note

We measured PC. 104 antenna with different cable length, the results as below,

## Return Loss



Antenna Efficiency



[^0]:    * Antenna is tested on a 2 mm thickness ABS material base substrate.

