

# Penta-Band Stand Alone PWB Antenna

Pulse Part Number: W3538



## Features

- Small form factor
- PWB size W x L x H (40x 15 x 0.7 mm)
- Lead free materials
- RoHS Compliant Product
- Mounting with adhesive tape
- 150, 200 and 300mm cable lengths available
- Connector options:
  - Hirose connector U.FL-series (I.PEX connector MHF-series compatible)
  - MMCX right angle jack (male)
  - Sunridge MCD series connector

## Applications

- Penta band EU/US GSM/WCDMA
- Frequency range: 850 / 900 / 1800 / 1900/ 2100 MHz

P/N	Cable length [mm]	Connector
W3538B0150	150	U.FL
W3538B0200	200	U.FL
W3538B0300	300	U.FL
W3538E0150	150	MMCX
W3538E0200	200	MMCX
W3538E0300	300	MMCX
W3538T0150	150	MCD
W3538T0200	200	MCD
W3538T0300	300	MCD

# Penta-Band Stand Alone PWB Antenna

Pulse Part Number: W3538

## W3538B0150 / W3538E0150 / W3538T0150

Typical free space performance, measured in test unit mechanics (position1.)

Frequency Range [MHz]	Max Gain [dBi]	Efficiency [%] / [dB]	Return loss min. [dB]	Impedance [ $\Omega$ ]	Operating Temperature [ $^{\circ}$ C]
824 – 960	1,5 (peak) -0,7 (min)	50 / -3,0 (peak) 30 / -5,2 (min)	-3	50	-40 to +85
1710 – 1990	4,5 (peak) 2,8 (min)	70 / -1,6 (peak) 55 / -2,6 (min)	-6		
1920 – 2170	3,9 (peak) 2,7 (min)	75 / -1,3 (peak) 60 / -2,2 (min)	-6		

## W3538B0200 / W3538E0200 / W3538T0200

Typical free space performance, measured in test unit mechanics (position1.)

Frequency Range [MHz]	Max Gain [dBi]	Efficiency [%] / [dB]	Return loss min. [dB]	Impedance [ $\Omega$ ]	Operating Temperature [ $^{\circ}$ C]
824 – 960	2,8 (peak) 0,5 (min)	70 / -1,6 (peak) 50 / -3,0 (min)	-6	50	-40 to +85
1710 – 1990	5,8 (peak) 3,6 (min)	80 / -1,0 (peak) 60 / -2,2 (min)	-6		
1920 – 2170	6,3 (peak) 2,7 (min)	80 / -1,0 (peak) 50 / -3,0 (min)	-6		

## W3538B0300 / W3538E0300 / W3538T0300

Typical free space performance, measured in test unit mechanics (position1.)

Frequency Range [MHz]	Max Gain [dBi]	Efficiency [%] / [dB]	Return loss min. [dB]	Impedance [ $\Omega$ ]	Operating Temperature [ $^{\circ}$ C]
824 – 960	2,8 (peak) 0,7 (min)	65 / -1,9 (peak) 40 / -4,0 (min)	-6	50	-40 to +85
1710 – 1990	4,5 (peak) 2,9 (min)	70 / -1,6 (peak) 60 / -2,2 (min)	-6		
1920 – 2170	4,0 (peak) 3,0 (min)	70 / -1,6 (peak) 60 / -2,2 (min)	-6		

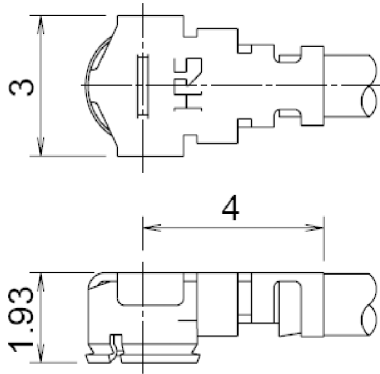
# Penta-Band Stand Alone PWB Antenna

Pulse Part Number: W3538

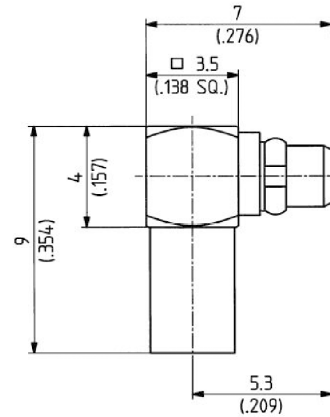
## Cable and Connector Configuration

Antenna feed cable: 1.13mm OD with Hirose connector (U.FL series, MHF compatible), 1.13 OD with MMCX right angle jack (male), 0.81mm OD with Murata GSC connector, 0.81mm OD with Sunridge MCD connector

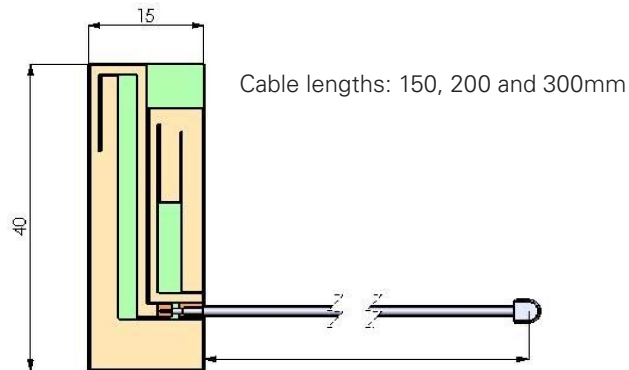
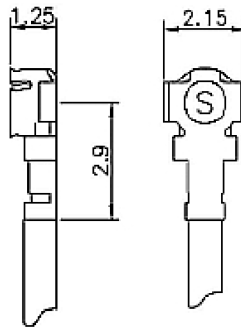
Hirose U.FL connector



MMCX right angle jack (male)



Sunridge MCD connector



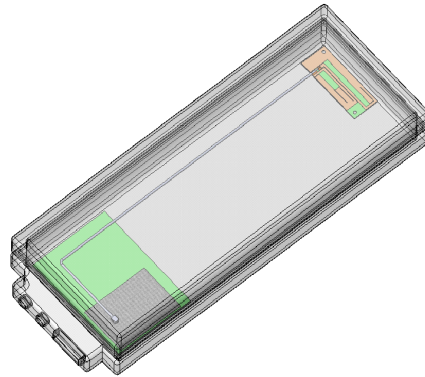
# Penta-Band Stand Alone PWB Antenna

Pulse Part Number: W3538

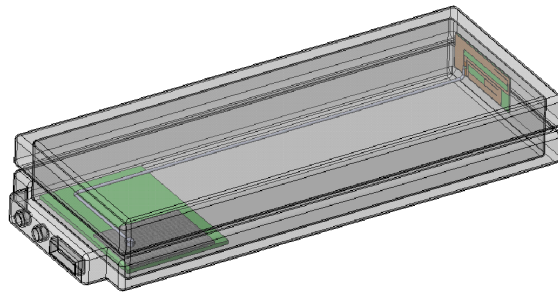
## Test Unit and Antenna Mounting Options

Test unit is illustrative and antenna does not need effective ground plane

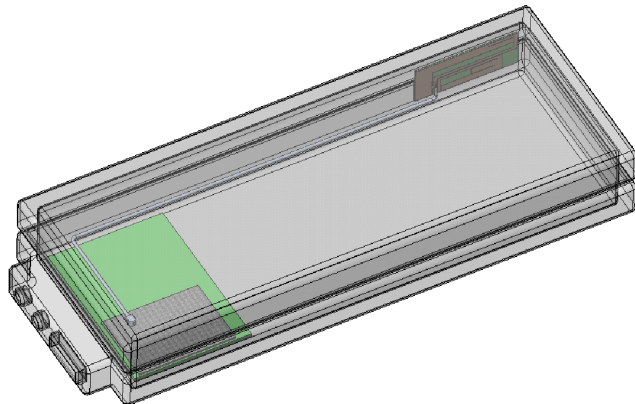
Position 1. Antenna could be mounted at same plane and level as device board or a different level also



Position 2. Antenna could be mounted on upright position at bottom end of device



Position 3. Antenna could be mounted on upright position at long edge of device



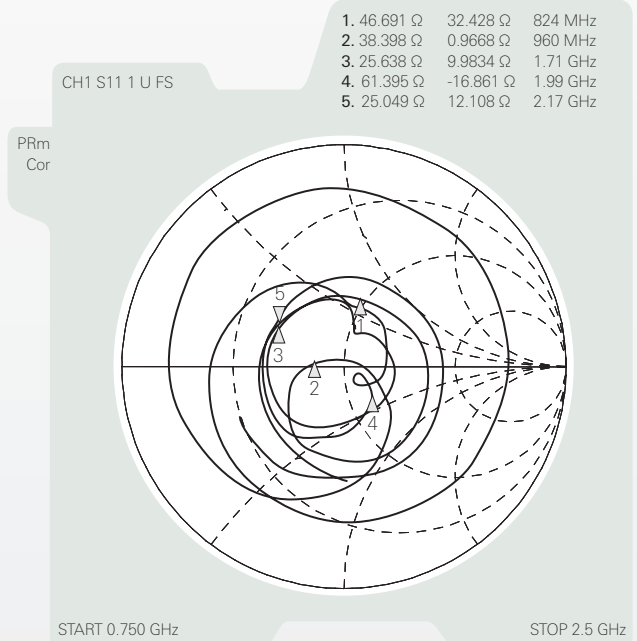
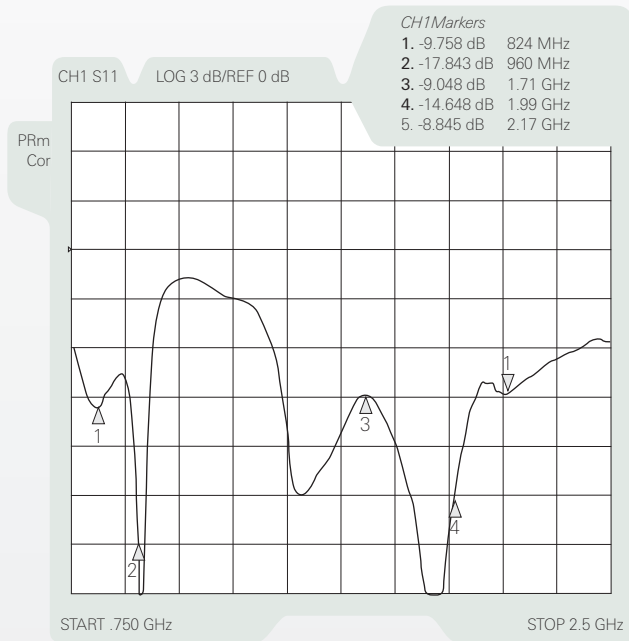
# Penta-Band Stand Alone PWB Antenna

Pulse Part Number: W3538

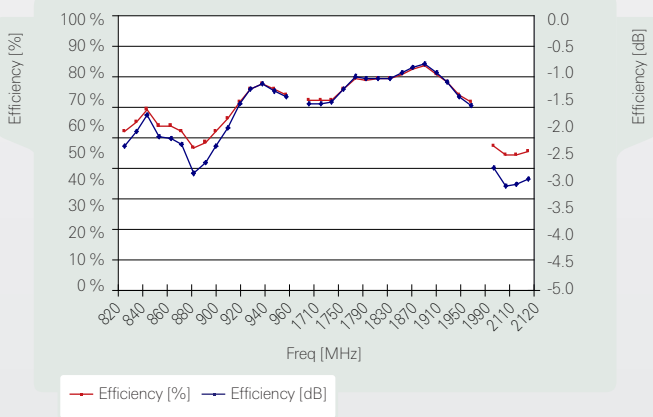
## Typical Electrical Characteristics (T=25 °C)

Typical free space performance, measured in test unit mechanics with 200mm feed cable (position 1.)

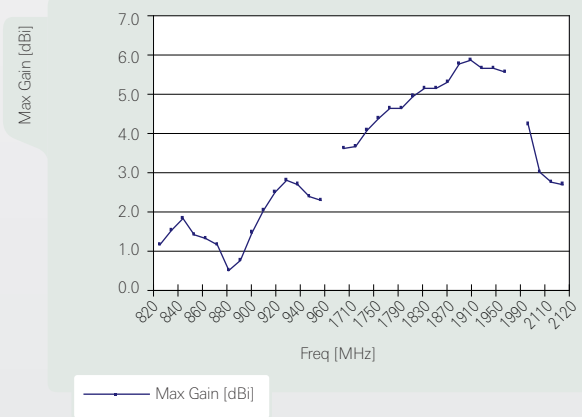
W3538B0200 / W3538E0200/ W3538M0200/ W3538T0200 typical Return Loss S11/impedance



## W3502 Total Radiation Efficiency free space



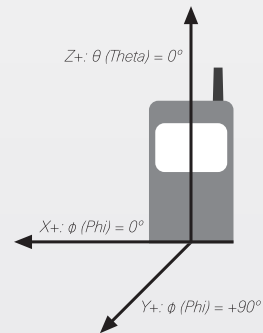
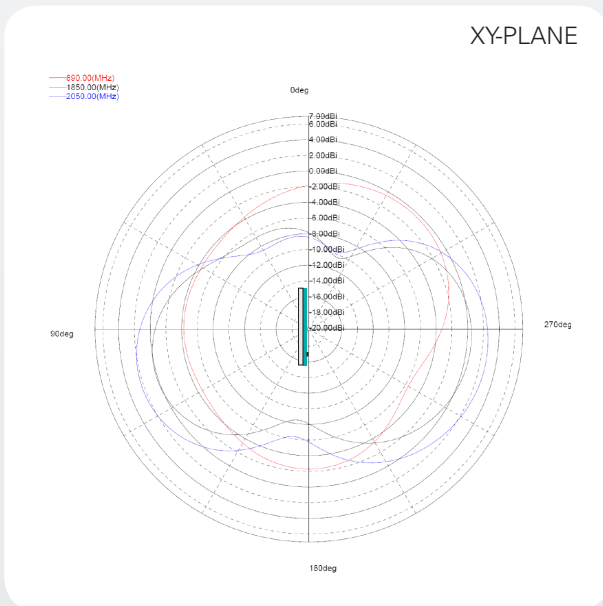
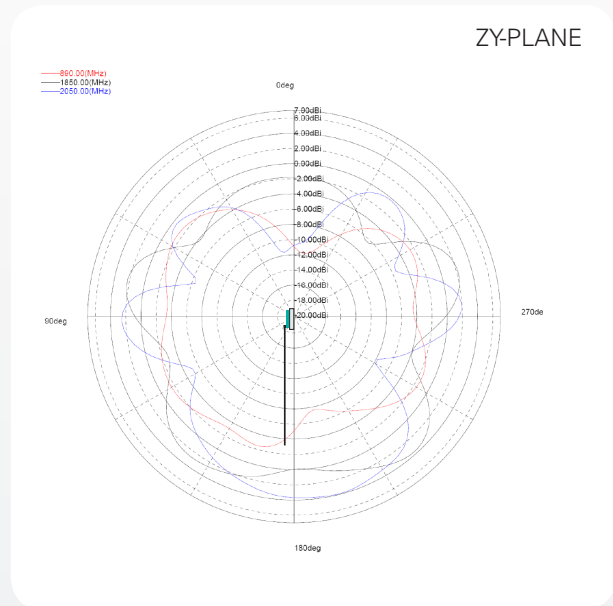
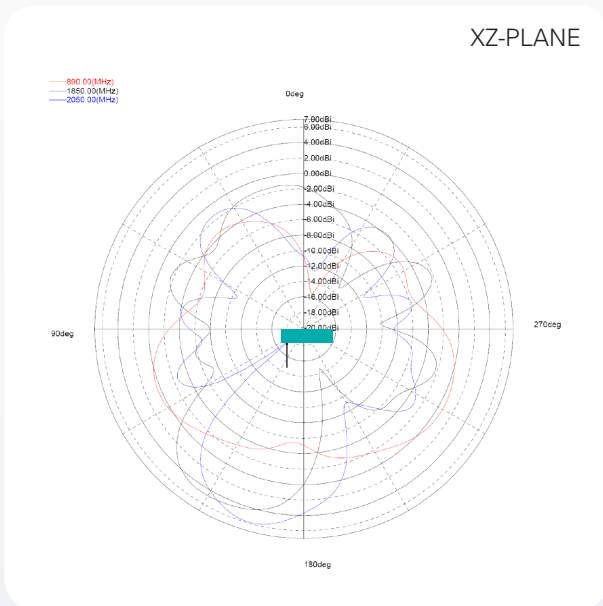
## W3502 Maximum Radiation Gain free space



# Penta-Band Stand Alone PWB Antenna

Pulse Part Number: W3538

## Typical Free Space Radiation Patterns



**Pulse Finland Oy**  
 Takatie 6  
 90440 Kempele, Finland  
 Tel. +358 207 935 500  
 Fax: +358 207 935 501

**Pulse Antennas USA**  
 12220 World Trade Drive  
 San Diego, CA 92128, USA  
 Tel. +1 858 674 8100  
 Fax +1 858 385 8003

**Pulse (Suzhou) Wireless Products Co., Ltd**  
 No.99 Huo Ju Road (No.29 Building, 4th phase)  
 Suzhou New District Science & Technology Industrial Park,  
 Jiangsu Province, Suzhou 215009, P.R. CHINA  
 Tel. +86 512 6807 9998  
 Fax +86 512 6809 8023

**Pulse GmbH & Co. KG**  
 Postfach 1255  
 71071 Herrenberg  
 Germany  
 Tel. +49 (0) 7032 7806 0  
 Fax + 49 (0) 7032 7806 12

