

*Application note*

## 1.88-1.93 GHz DECT ANTENNA

*10 x 3.2 x 2.0 mm Ceramic Chip Antenna  
(Ground Cleared Under Antenna 10.80 x 6.25 mm)*

*Pulse Part Number: W3022*

### Status

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## W3022 1.88-1.93 GHz DECT Antenna General Features and Applications

Ground cleared under antenna, clearance area **10.80 x 6.25 mm**

### Features

- Omni directional radiation
- Low profile
- Compact size W x L x H (10 x 3.2 x 2 mm)
- Low weight (310 mg)
- Lead free materials
- Fully SMD compatible
- Lead free soldering compatible
- Tape and reel packing
- RoHS compliant product



### Applications

- DECT bands (European + US)
- 1.88 - 1.93 GHz

### Electrical specifications @ +25 °C

Note: Electrical characteristics depend on test board (GP) size and antenna positioning on GP and ground clearance area size.

### 1.88 - 1.93 GHz DECT

Typical performance

(Test board size 80 x 37 mm, PWB ground clearance area **10.80 x 6.25 mm**, position 1 on PWB, see Page 9)

Frequency Range [MHz]	Linear Max Gain [dBi]	Efficiency [%] / [dB]	Return loss min. [dB]	Impedance [Ω]	Operating Temperature [°C]
1880 – 1930	2.5 (peak) 2.0 (band edges)	80 / -1 (peak) 70 / -1,55 (band edges)	-12	50	-40 to +85

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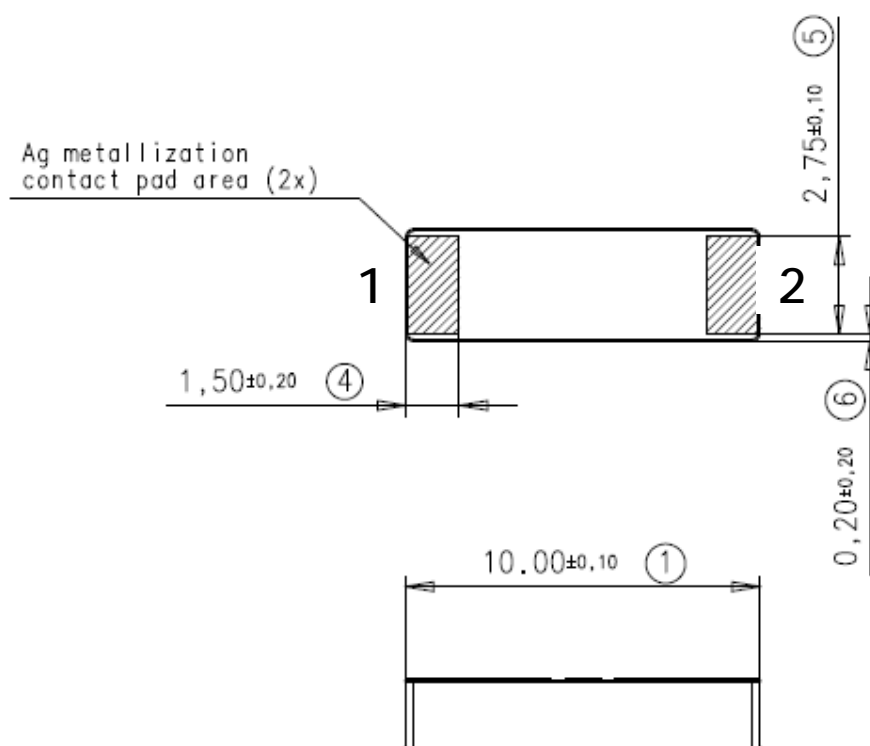
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## W3022 1.88-1.93 GHz DECT antenna terminal configuration and dimensions

Ground cleared under antenna, clearance area 10.80 x 6.25 mm



No.	Terminal Name	Terminal Dimensions
1	Feed / GND	1.5 x 2.75 mm
2	Feed / GND	1.5 x 2.75 mm

Antenna is symmetrical. Either of terminals 1 or 2 can be Feed / GND

## W3022 1.88-1.93 GHz DECT Antenna PWB Layout Specifications

Ground cleared under antenna, clearance area **10.80 x 6.25 mm**

Matching and tuning component values depend on application and surrounding mechanics / materials.

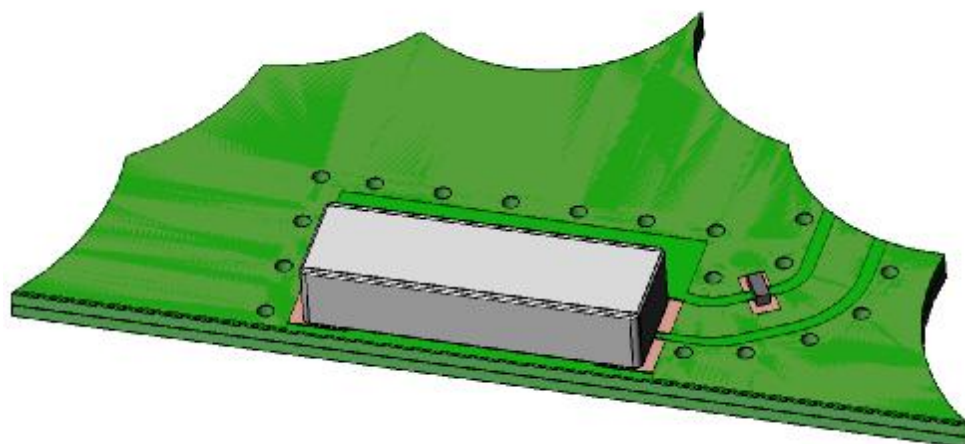
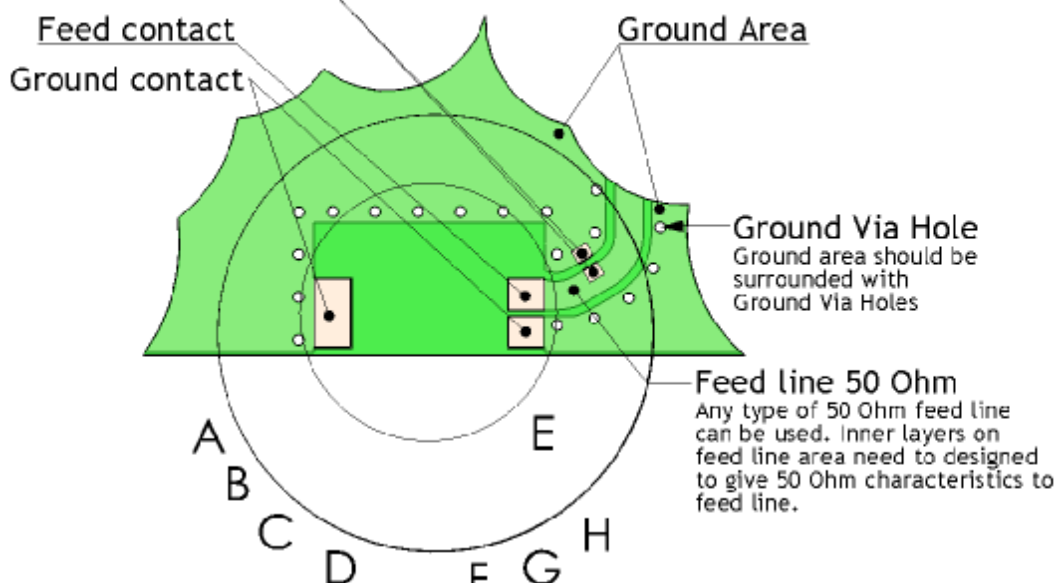
Feed line should be designed to match 50 W characteristic impedance, depending on PWB material and thickness.

Recommended test board layout for electrical characteristic measurement, test board outline size 80 x 37 mm.

### *PWB layout for W3022 1.88-1.93 GHz DECT Antenna*

Note: All dimensions are in metric system.

#### Matching Component (optional shunt)



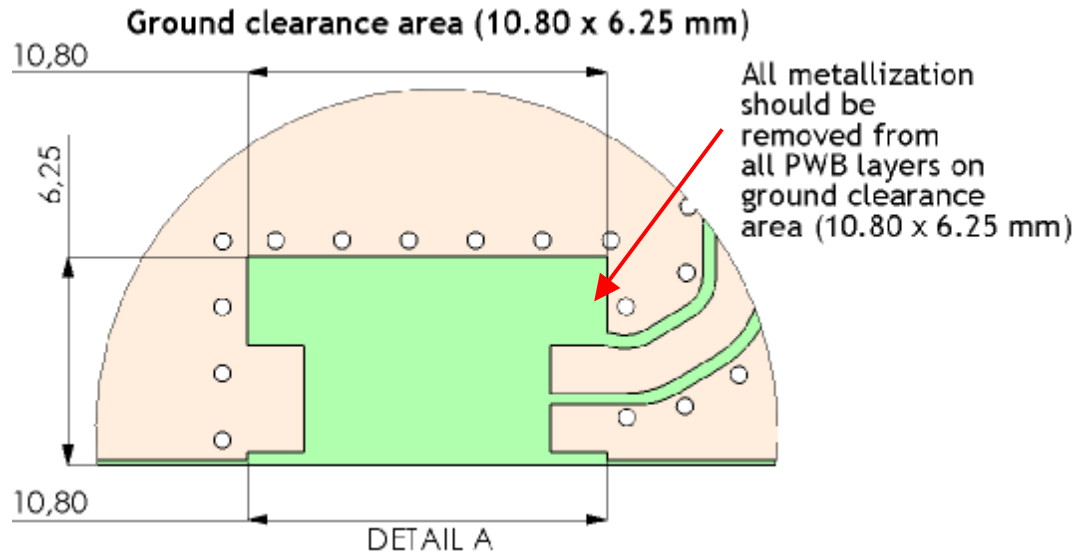
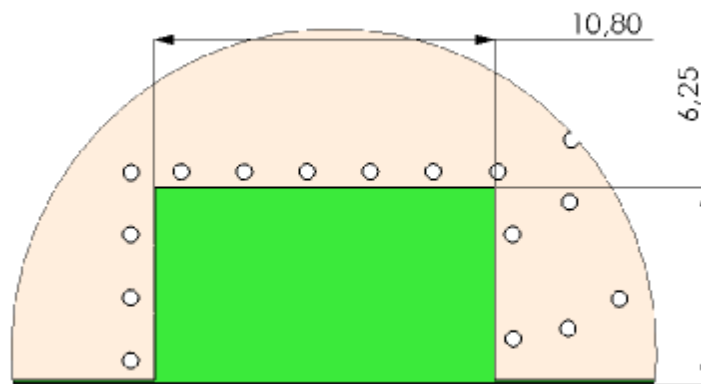
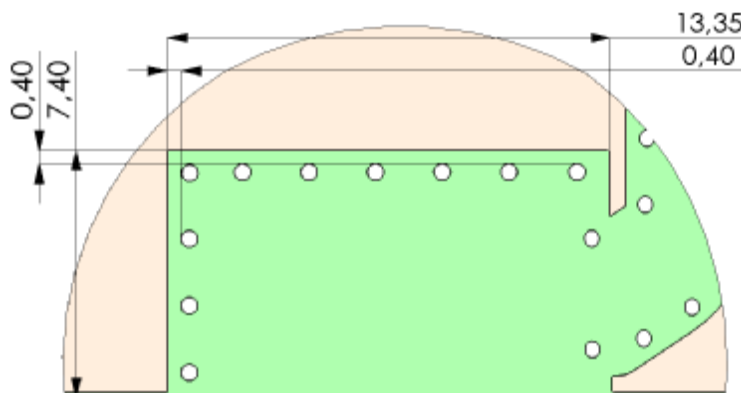
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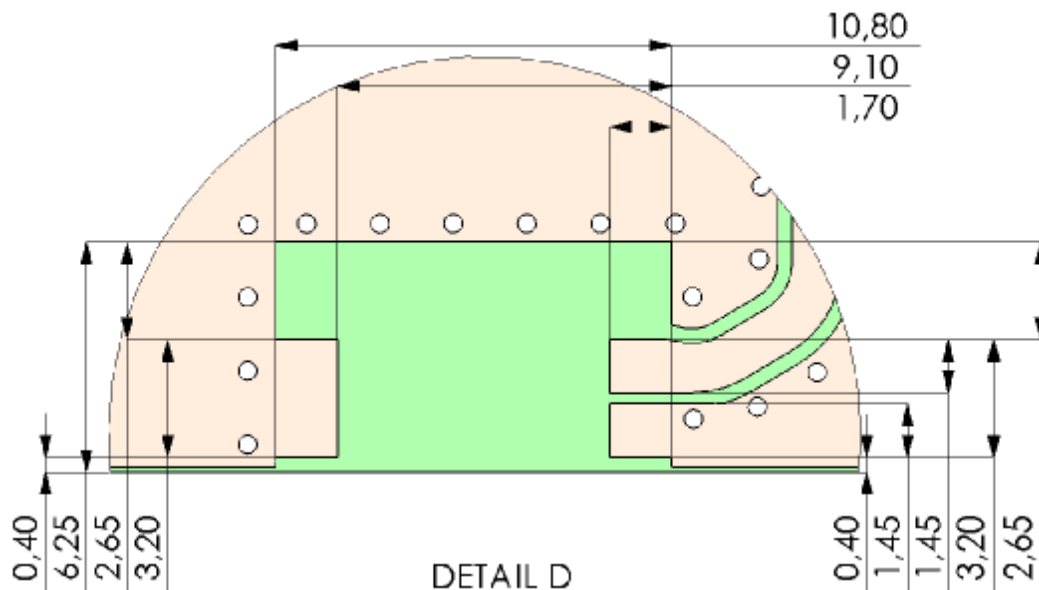


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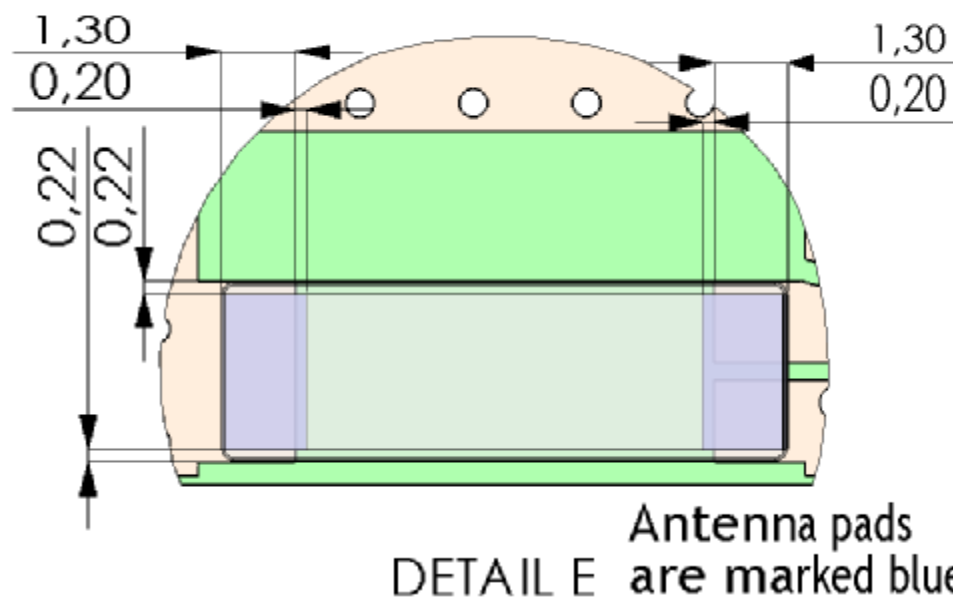
**Ground clearance area for W3022 1.88-1.93 GHz DECT Antenna****Opening in bottom/inner ground layers****Opening in other layers (no ground/ RF)**

**PWB pad dimensions and antenna position for W3022 1.88-1.93 GHz DECT Antenna**

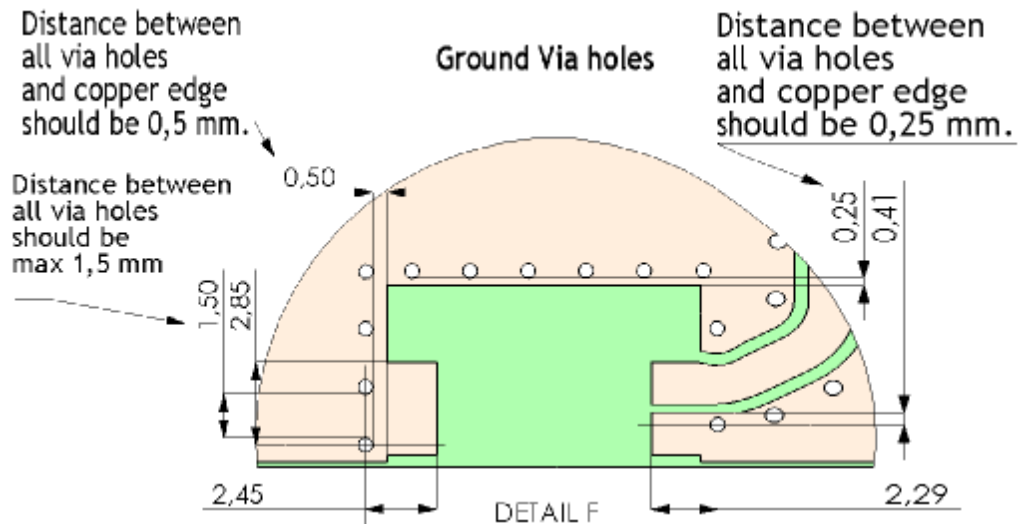
**Pad dimensions in top copper**



**Antenna position on PWB layout**

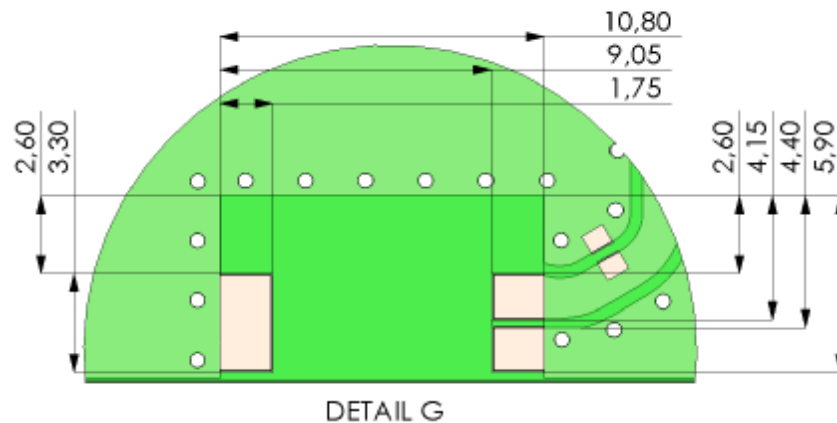


### Typical ground via hole placement in PWB layout for W3022 1.88-1.93 GHz DECT Antenna

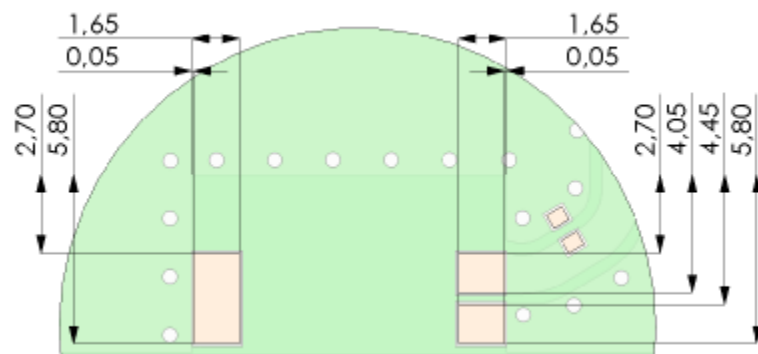


### Solder resist opening and Paste stencil recommendation for W3022 1.88-1.93 GHz DECT Antenna

#### Solder resist opening



#### Paste stencil recommendation



DETAIL H

Paste stencil thickness recommendation is 0,1 mm

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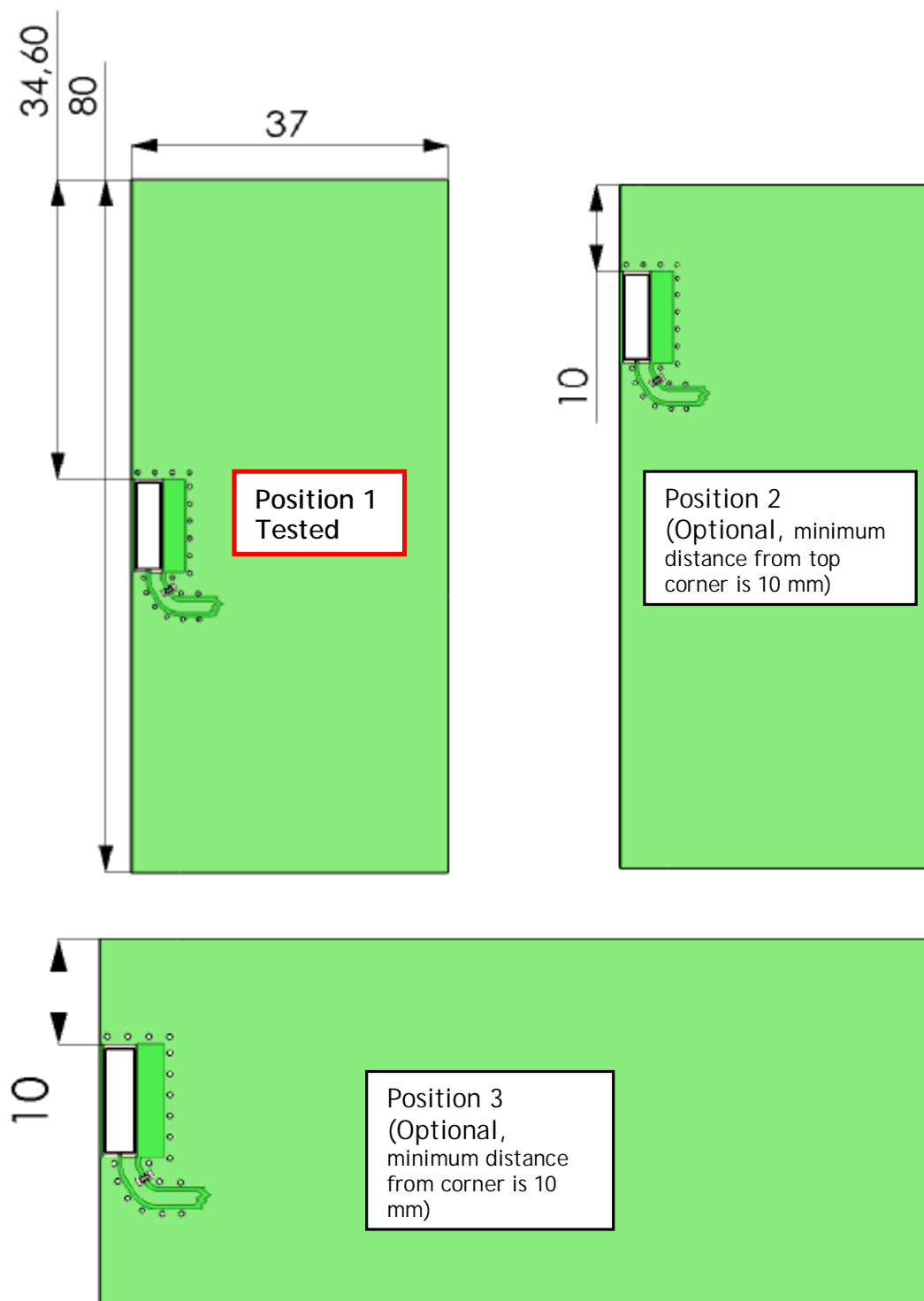
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### Recommended antenna position on PWB for W3022 1.88-1.93 GHz DECT Antenna

Our test PWB size is 37 x 80 mm, other sized boards can be used depending on customer device size (minimum 35 x 35 mm)



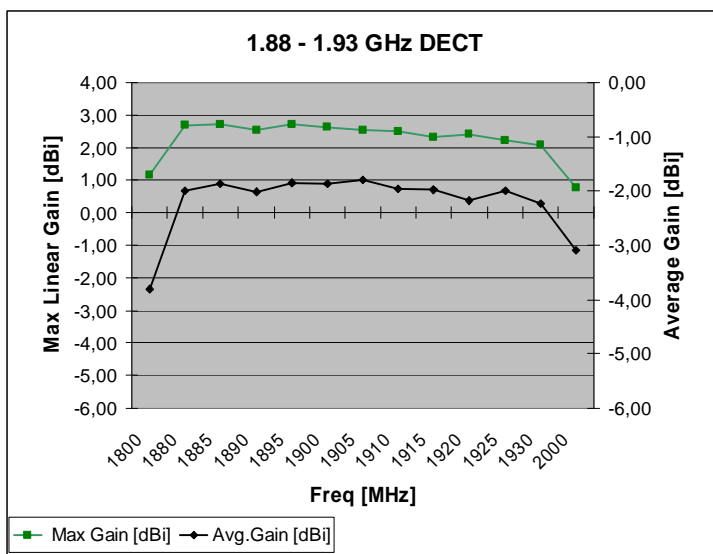
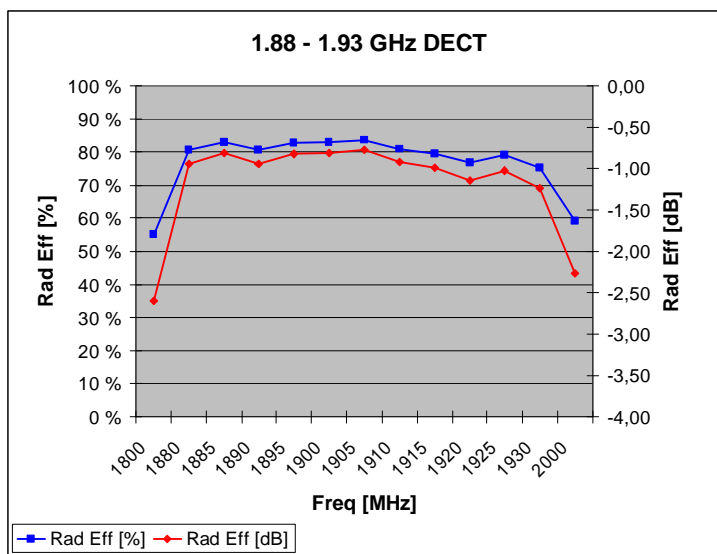
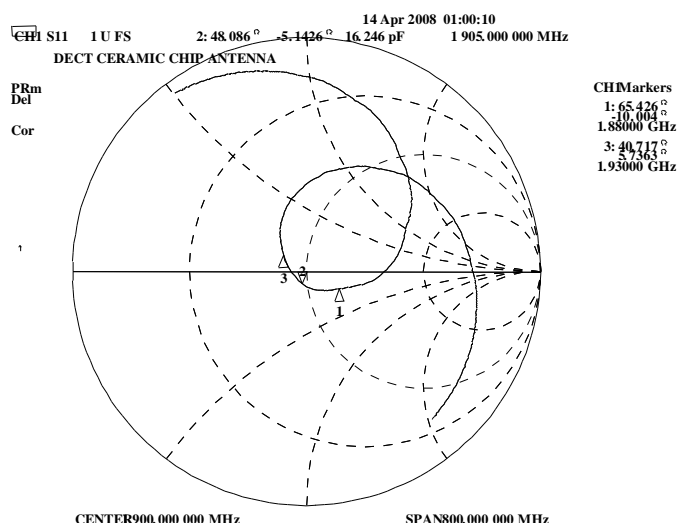
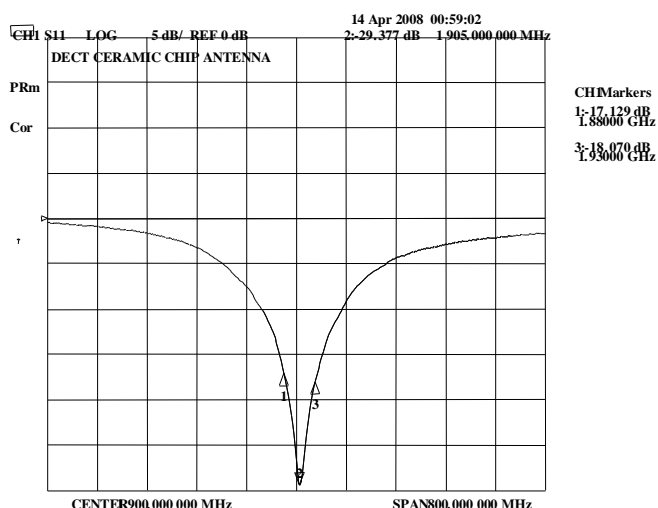
## W3022 1.88-1.93 GHz DECT Antenna Test Set Up and Measurement Performance

Ground cleared under antenna, clearance area **10.80 x 6.25 mm**

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

Measured on the 80 x 37 mm test board with matching circuit (2,7 pF shunt matching capacitor on feed). Measured in antenna position 1 on PWB layout, see page 9.

Typical Return Loss S11/ impedance, free space efficiency and gain



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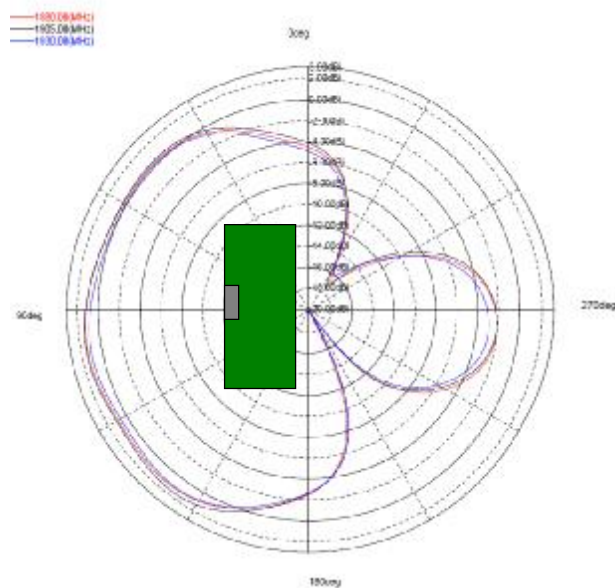
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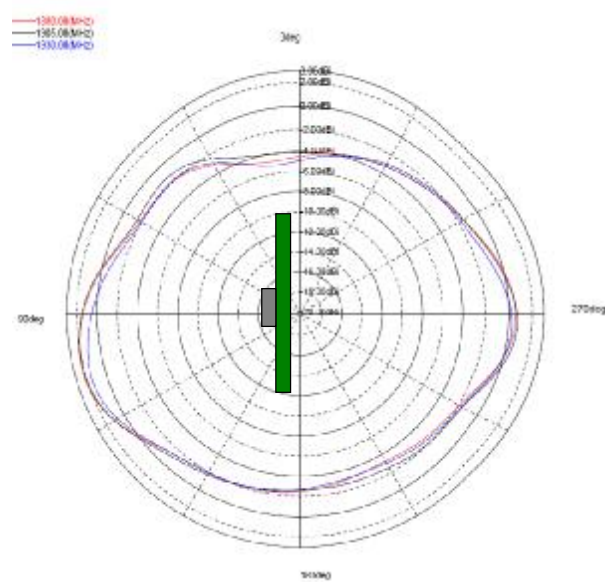
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## Typical Free Space Radiation Patterns

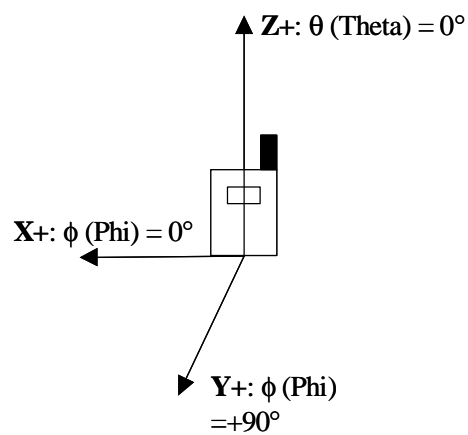
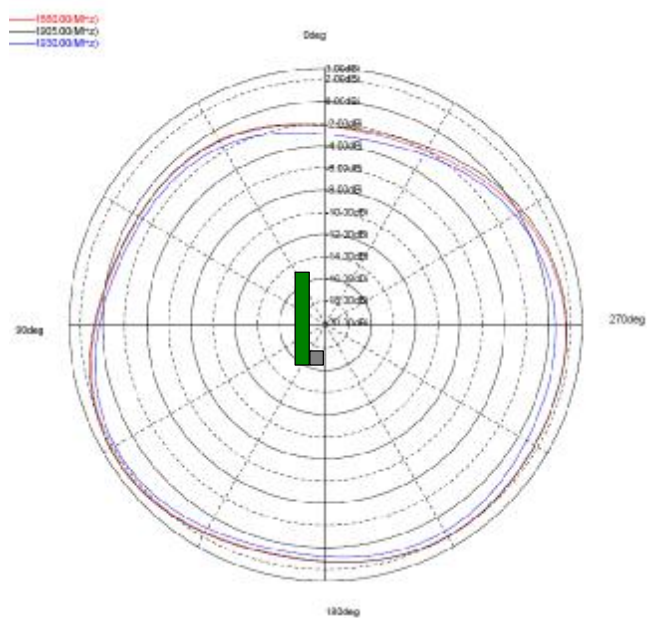
XZ-PLANE



ZY-PLANE



XY-PLANE

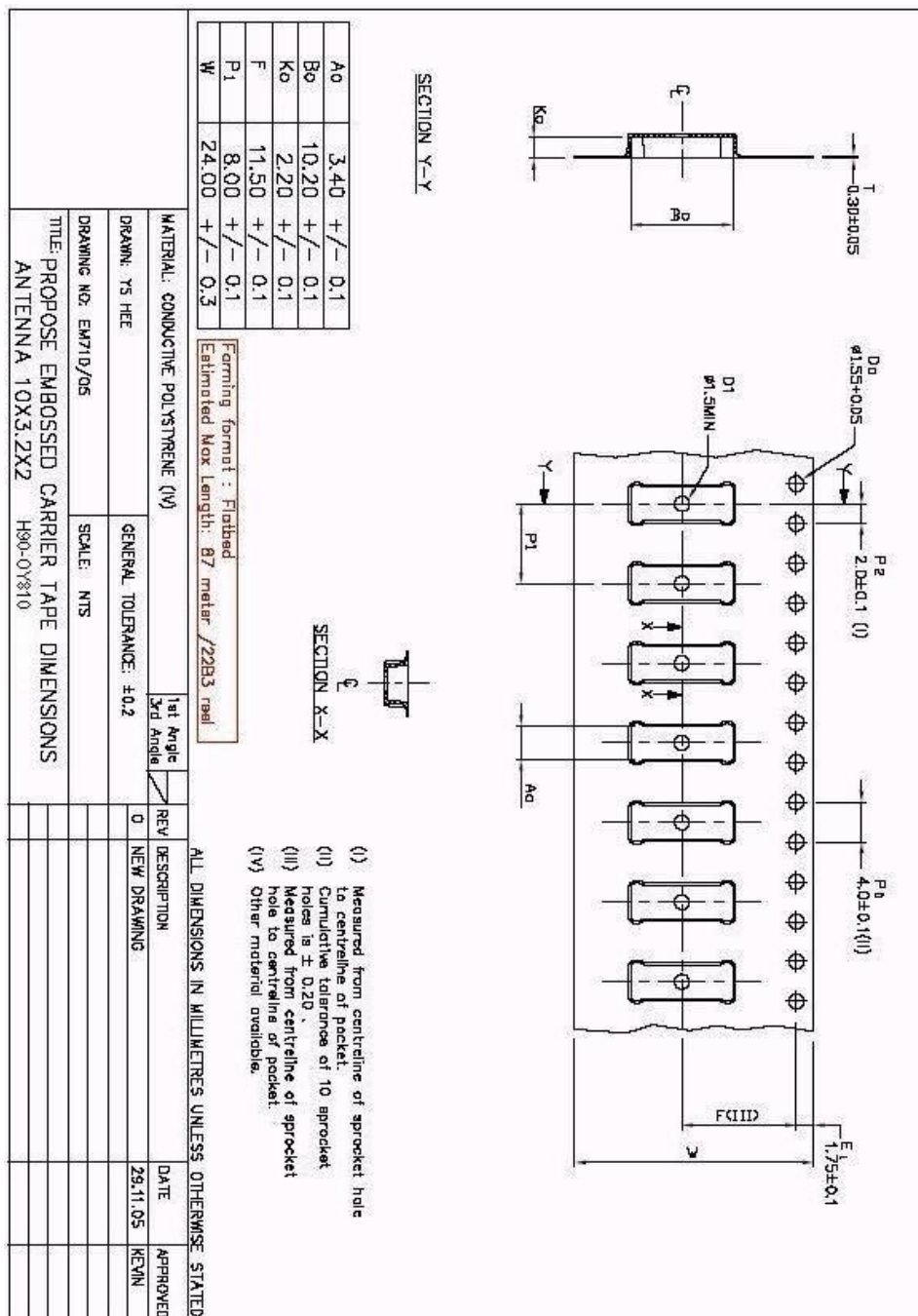


## W3022 1.88-1.93 GHz DECT Antenna Packing

### General

Tape and reel packing is used. Carrier tape, reel and box dimensions are presented in following pictures.

### Carrier tape



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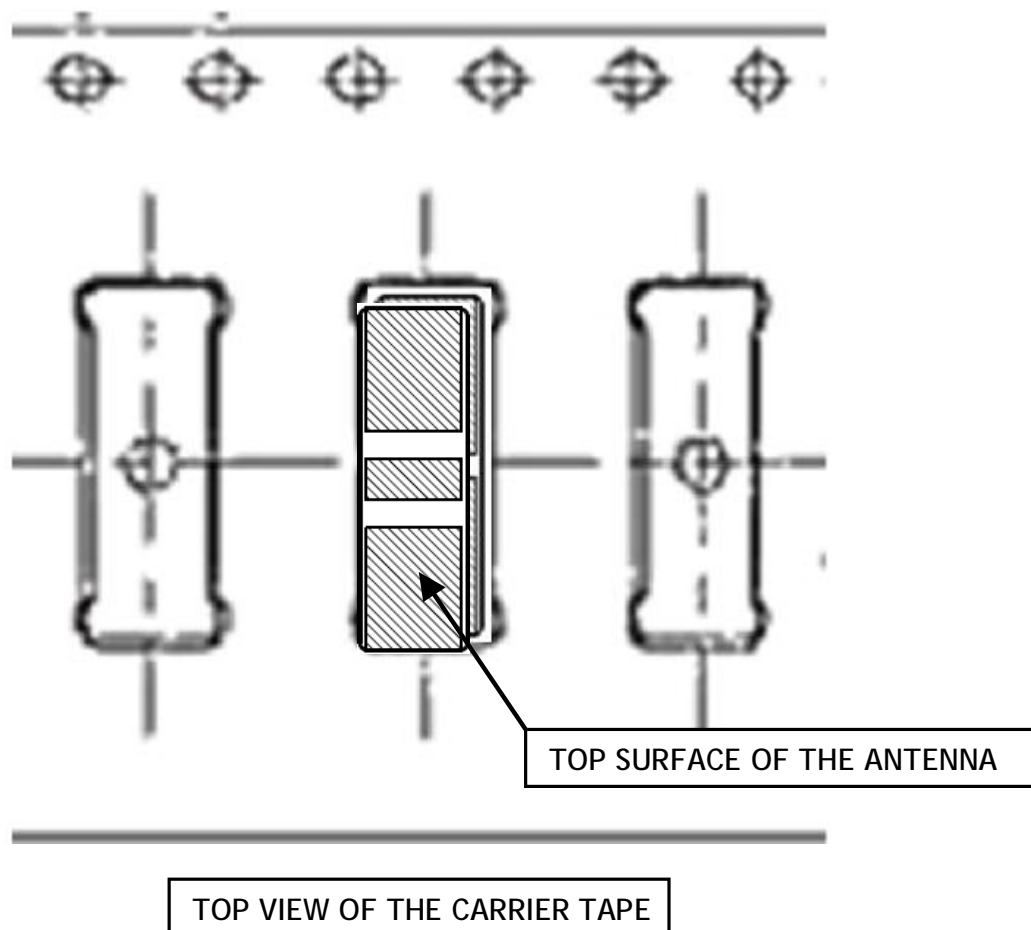
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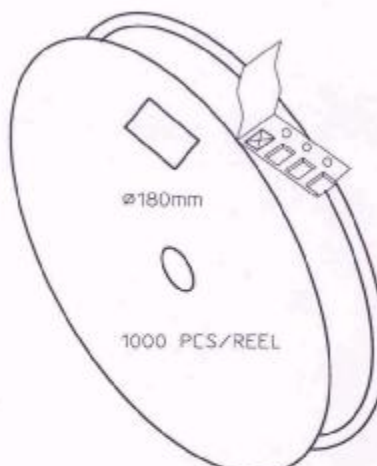


### Block orientation

Antenna soldering pads facing down to the bottom of the carrier tape.



## Packing form

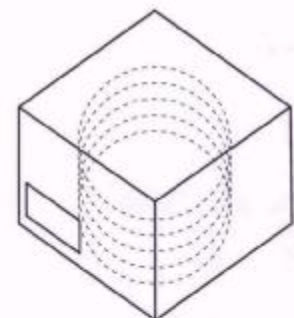


CARRIER TAPE H85-00188  
width=24,00 depth=2.20  
COVER TAPE H85-00159  
width=21.20

LENGTH OF TAPE:


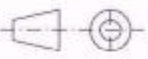
- Leader section: min 350 mm before component section
- Trailer section: min 40 mm after component section.

Empty part cavities at leader and trailer section of the tape must be sealed with top cover tape.



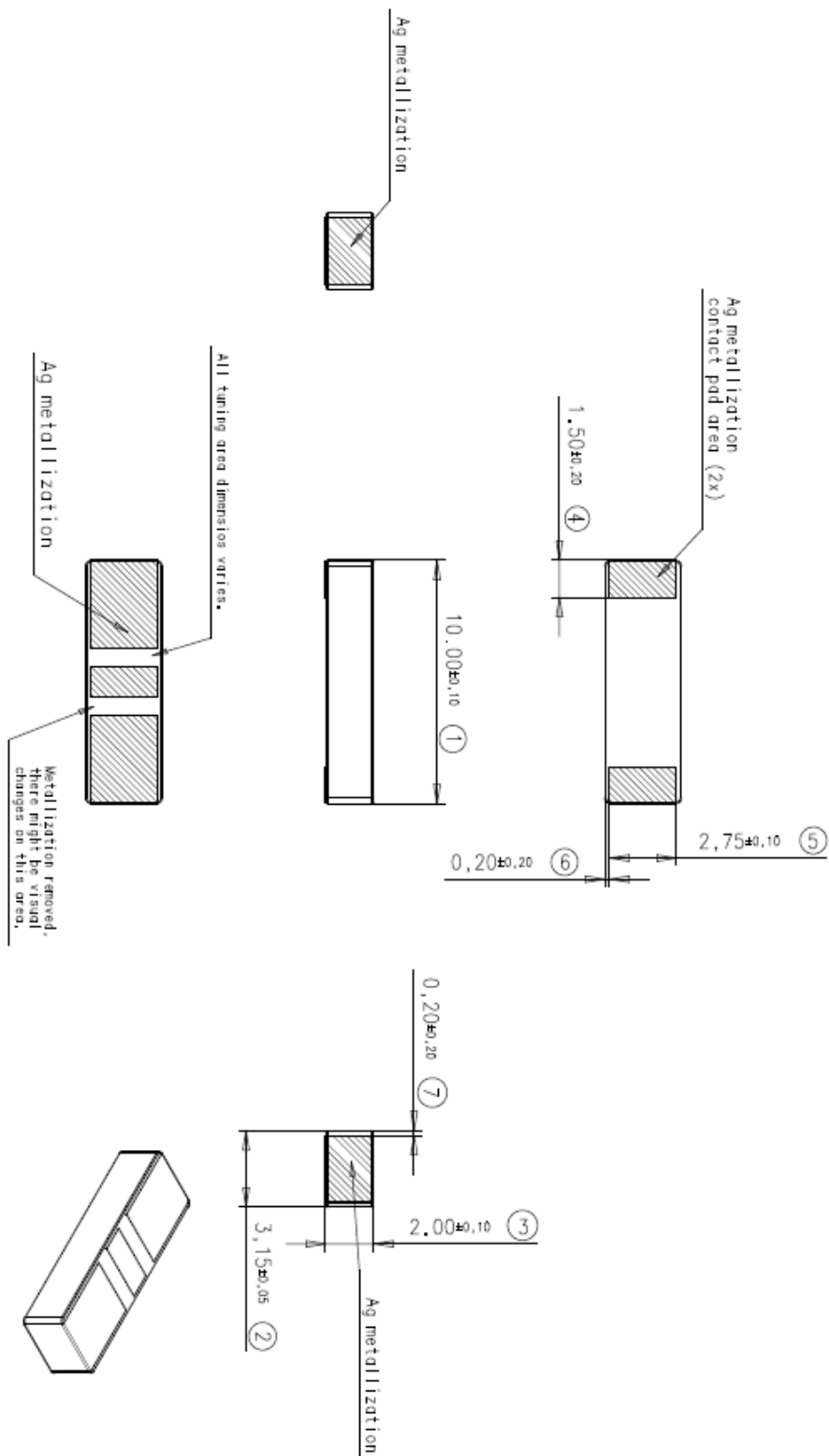
BOX H85-00128 1 pcs  
(182x182x125)  
- LABEL 1 pcs/BOX

REEL H85-00160 4 pcs  
(D180, W28)  
- REEL LABEL 1 pcs/REEL

MATERIAL							
HANDLINGS							
		RAT IO	DRWN	160107 PeHa	H		
			DGNER		G		
			CHKD		F		
			APPRD		E		
			APPRD BY		D		
PRODUCT H90-OY810 DENOMINATION PACKING FORM					C		
					B		
					A		
			VERSION		MOD/DATE/NAME		

# W3022 1.88-1.93 GHz DECT Antenna

## Mechanical Outline



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