

## WAVEGUIDE SECTION

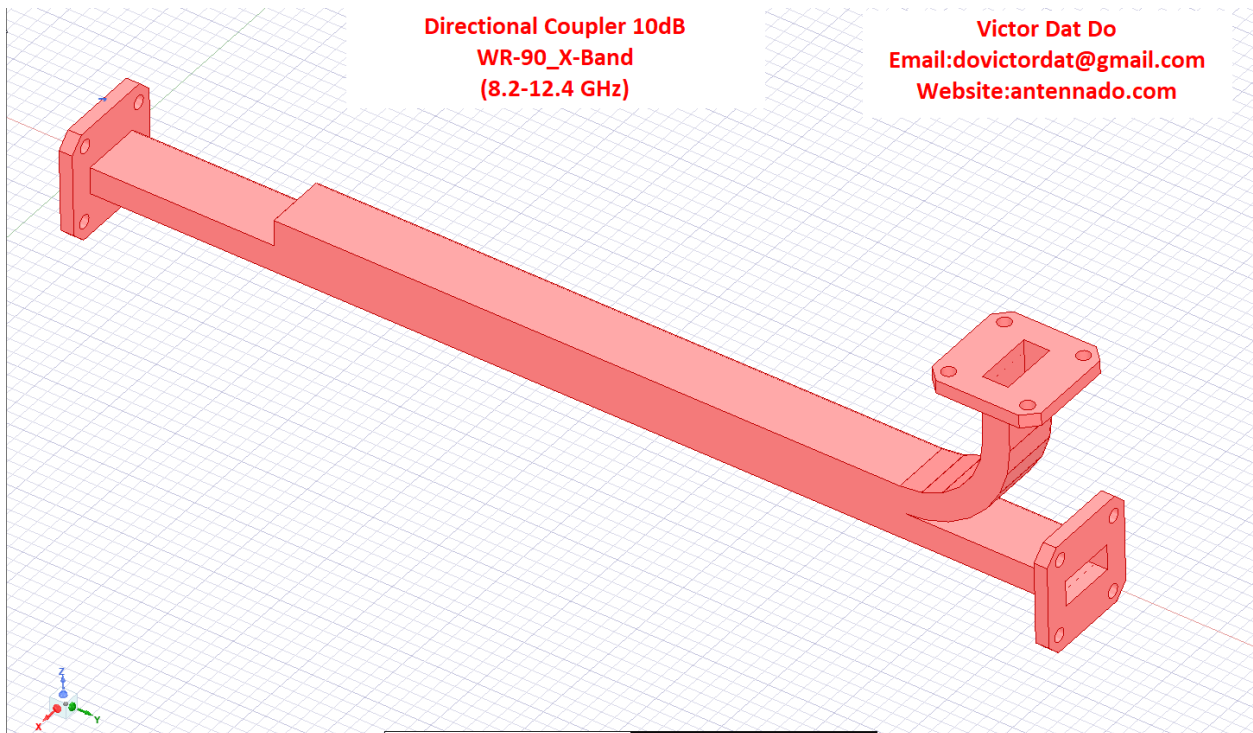
### I.Design waveguides:

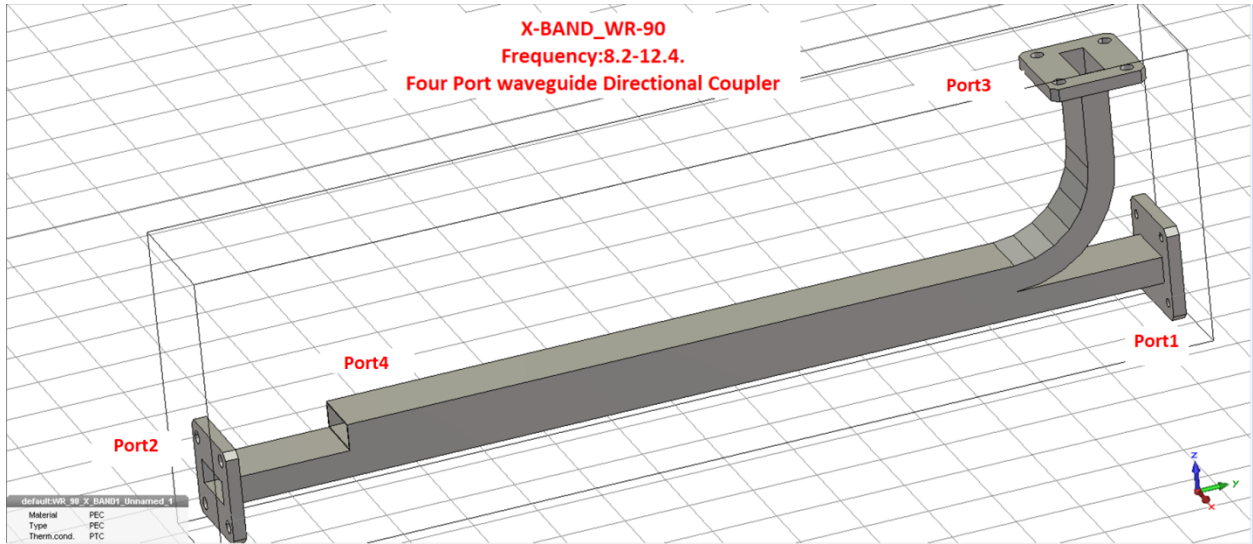
- 1)WR-90\_X-Band\_Directional Coupler 10dB.
- 2)WR-51 K-Band Straight.
- 3)WR-51 K-Band Twist, bend.
- 4)WR-340 D-Band 90 Degree.
- 5)WR-22 Q-Band E-plane, H-plane.
- 6)WR-22 Q-Band multiple bend.
- 7)WR-284 S-Band.
- 8) WR-19 U-Band .
- 9) WR-15 V-Band.
- 10)WR-137 C-Band Two Sections.

### II.Combine Waveguides and Antennas to :

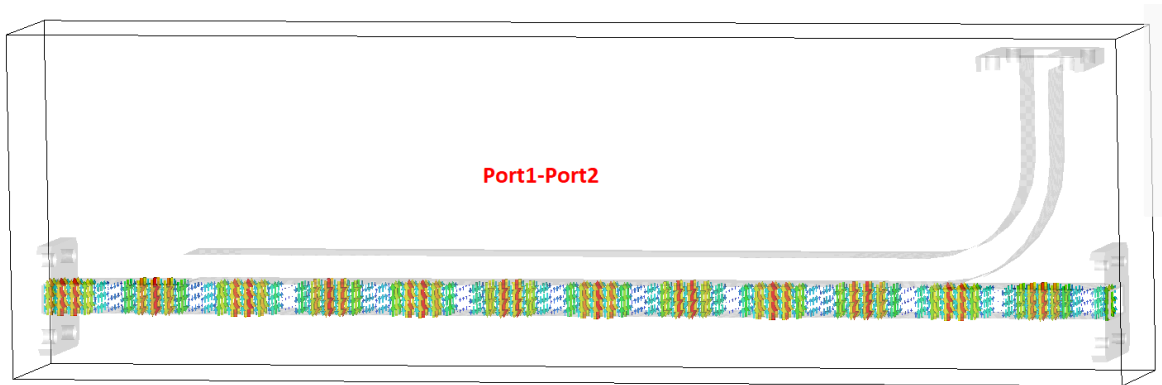
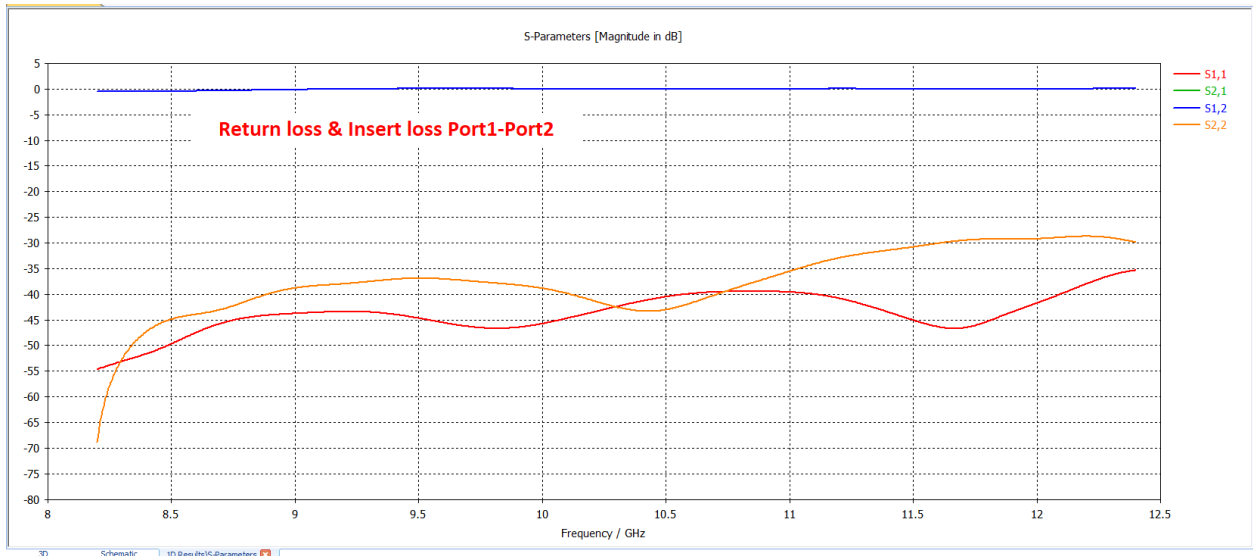
Antenna name: Waveguide Antennas : High Power handling, more Gain, Easy to tilt angle 30, 60,90 ... Directional Angle .

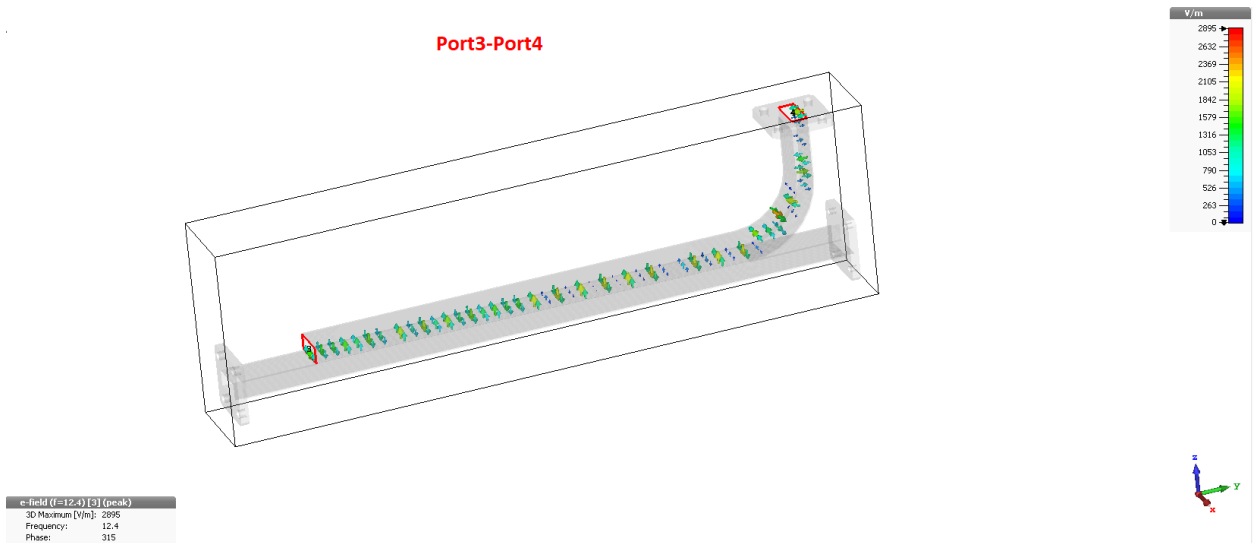
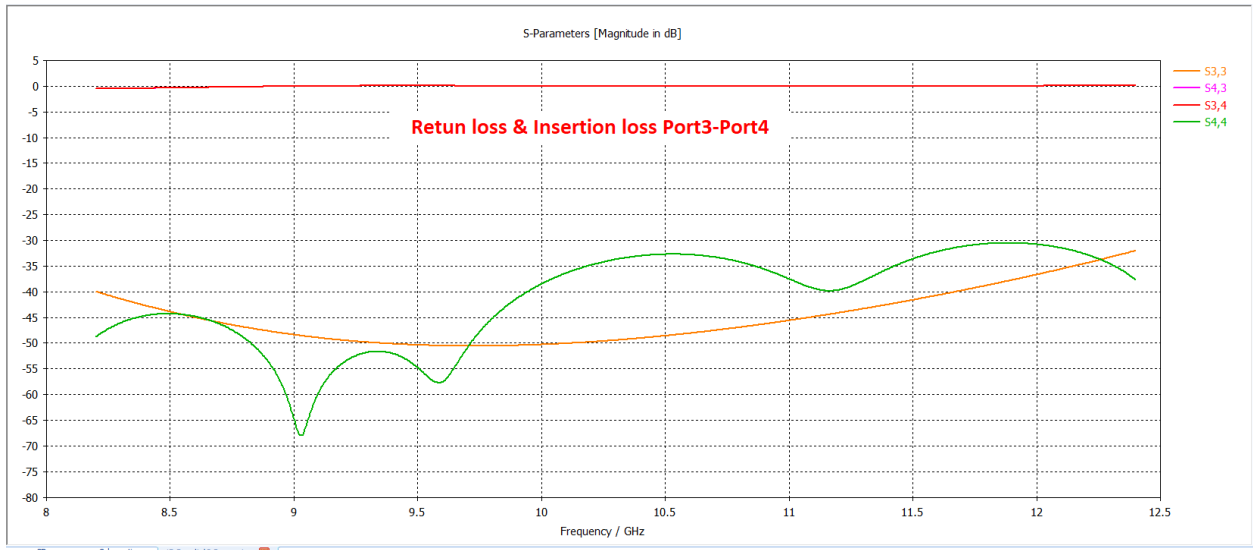
- 1)WR-90\_X-Band\_Directional Coupler 10dB.

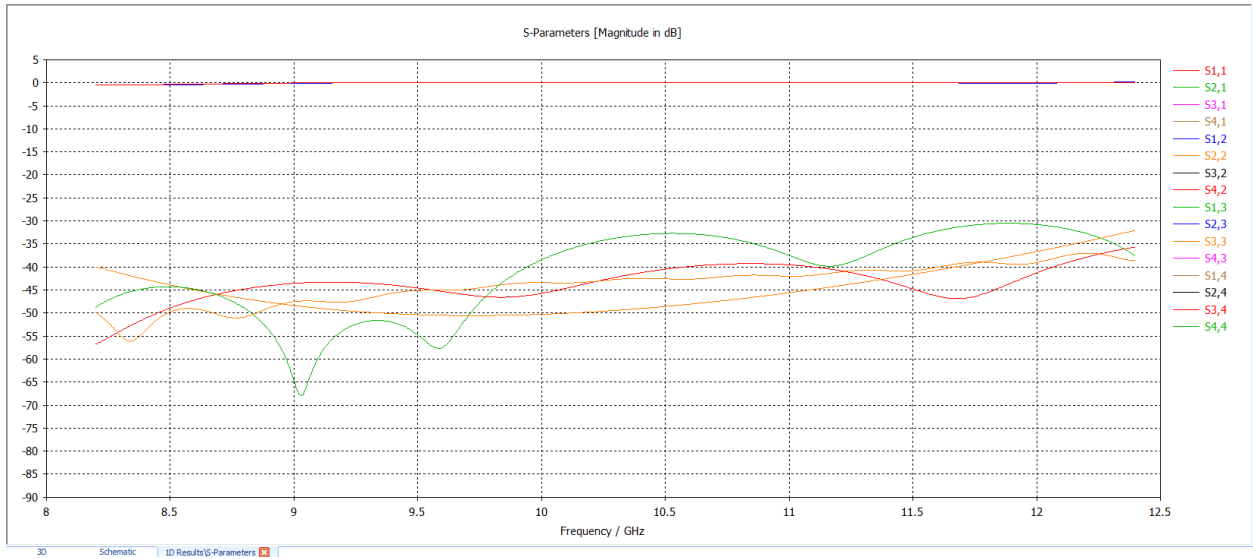




1) Step1 (Baseline) Port1-Port2 (only), Port3-Port4 (only) No turning





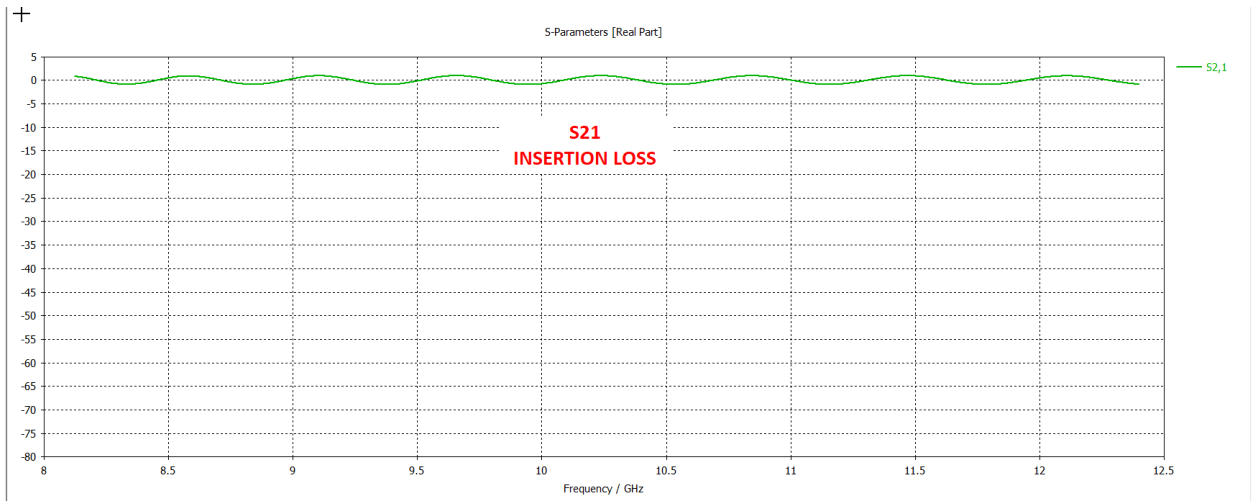
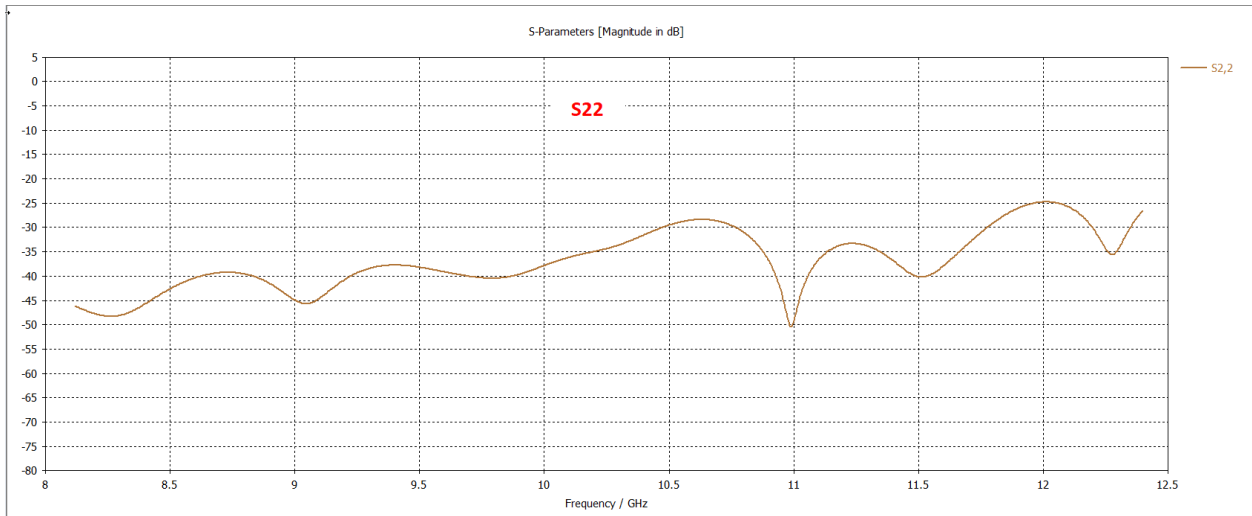
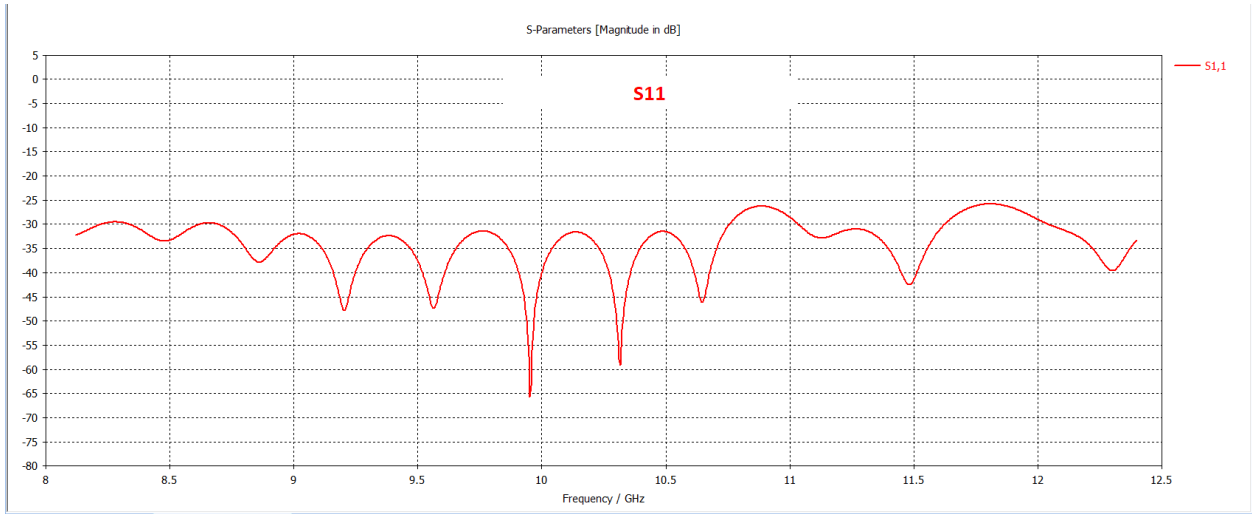


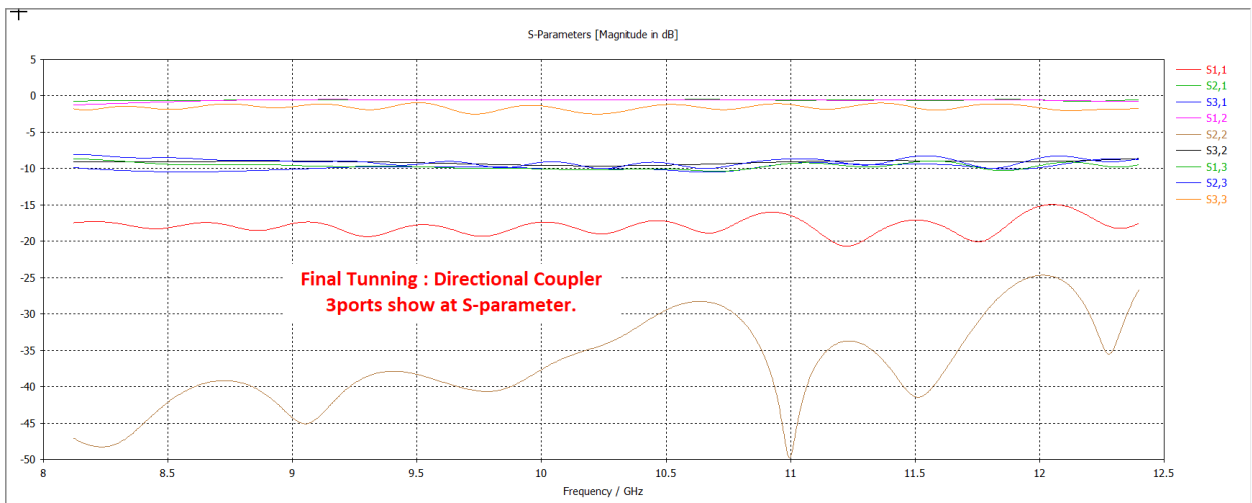
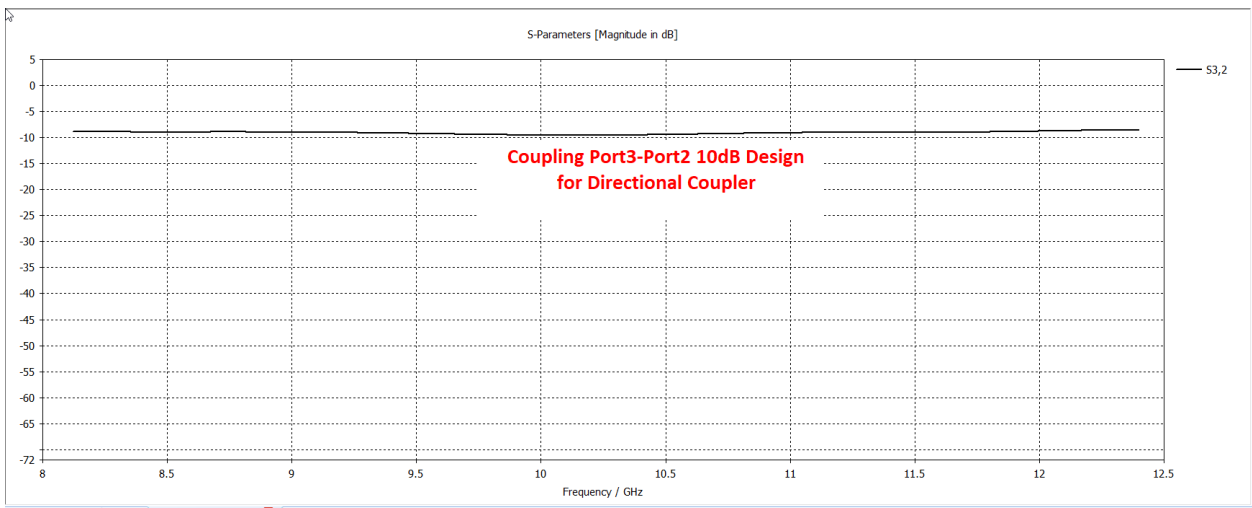
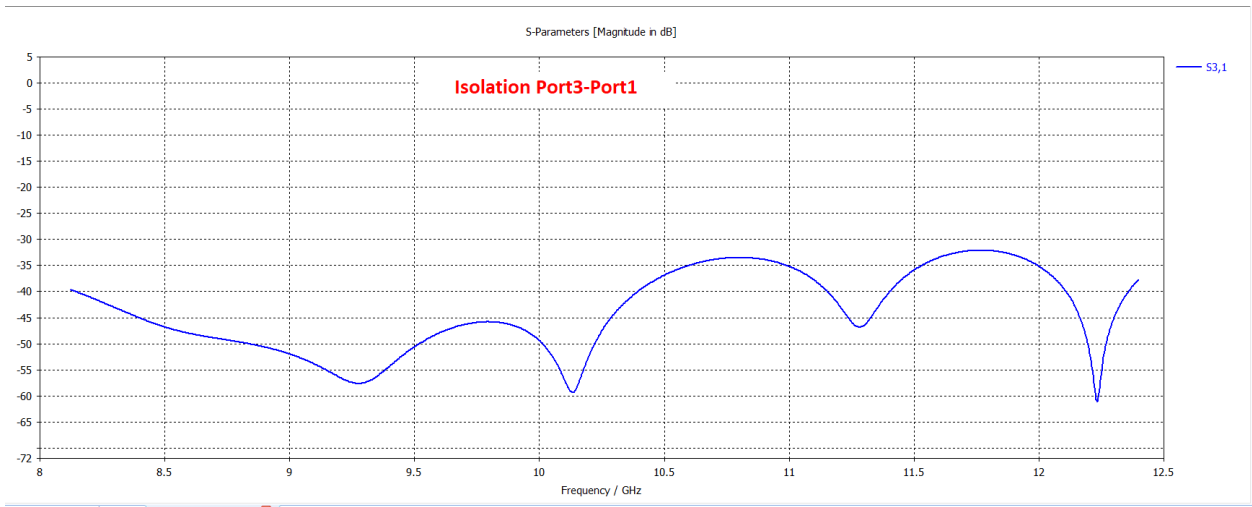
## Step2 (Turning) Port1,Port2,Port3 communication show S-parameter , Port4 (termination)

How are tuning and optimization:

- Port4 (Terminate with Ferrite Cone).
- Open the "Bethe holes" for optimization numbers of dB Attenuator.
- Optimization Distance "Bethe hole" , one hole, multiple holes .



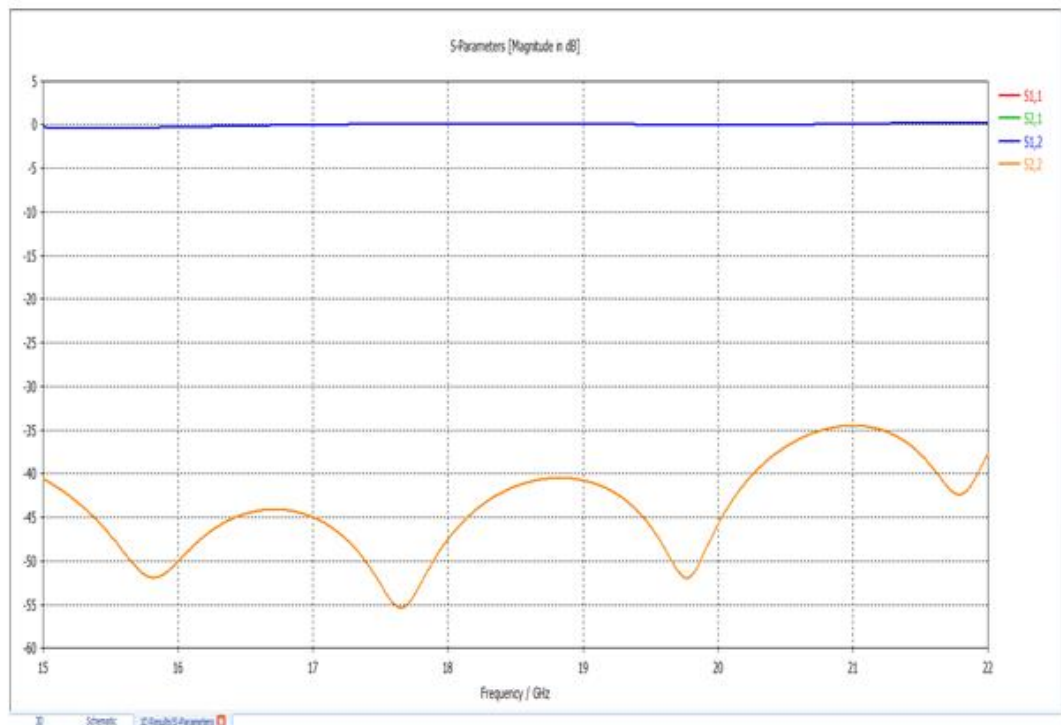
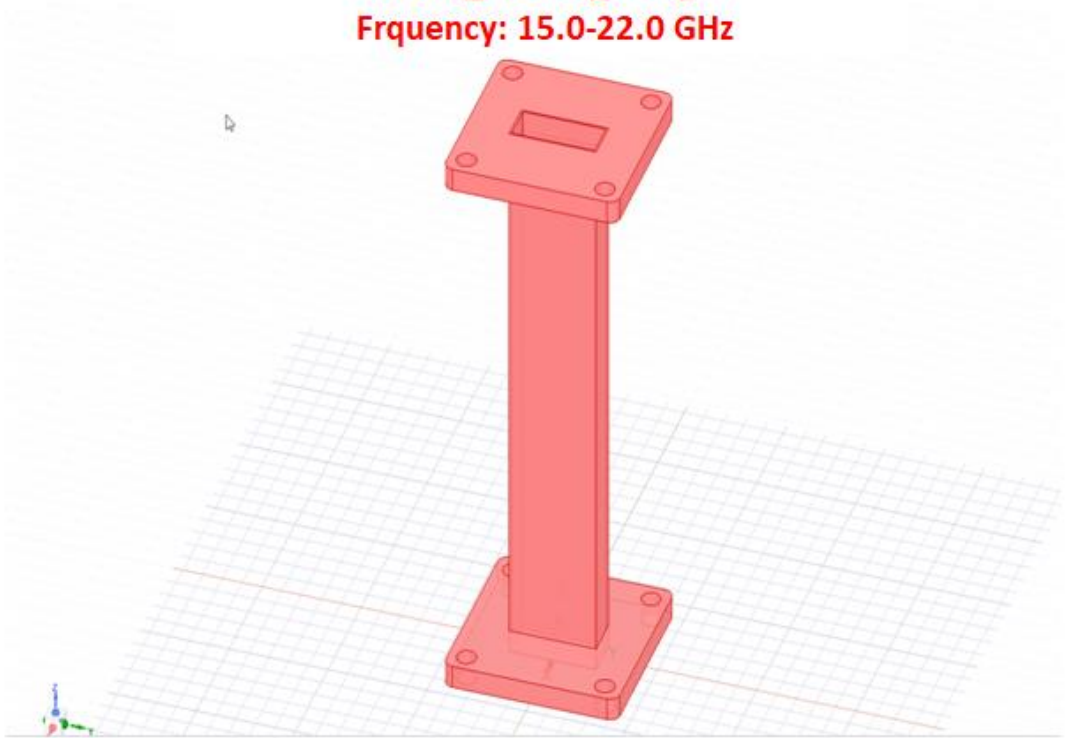




## 2)WR-51 K-Band Straight.



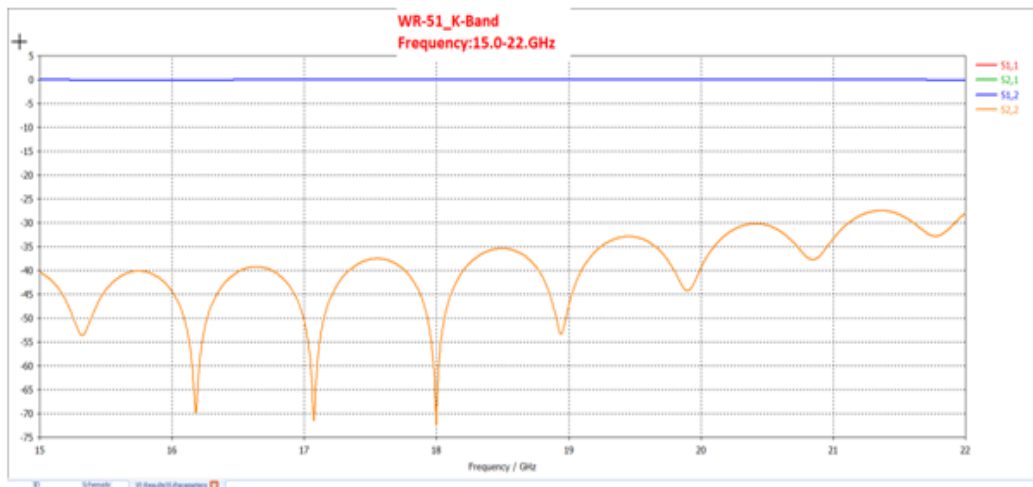
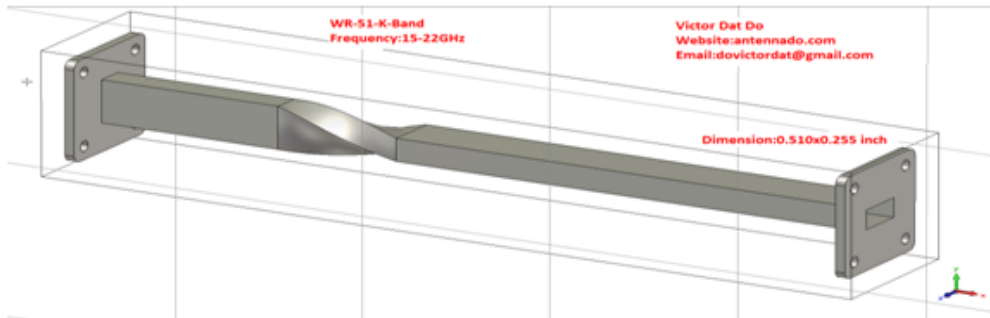
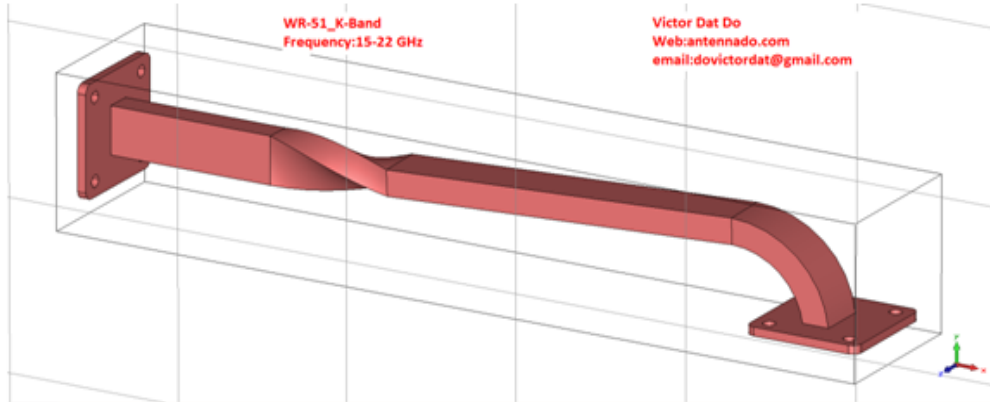
**WR-51\_K-Band\_Straight**  
**Frequency: 15.0-22.0 GHz**



### 3)WR-51 K-Band Twist, bend.



## WR-51-K-Band,Twist\_Bend Frequenc: 15.0-22.0 GHz



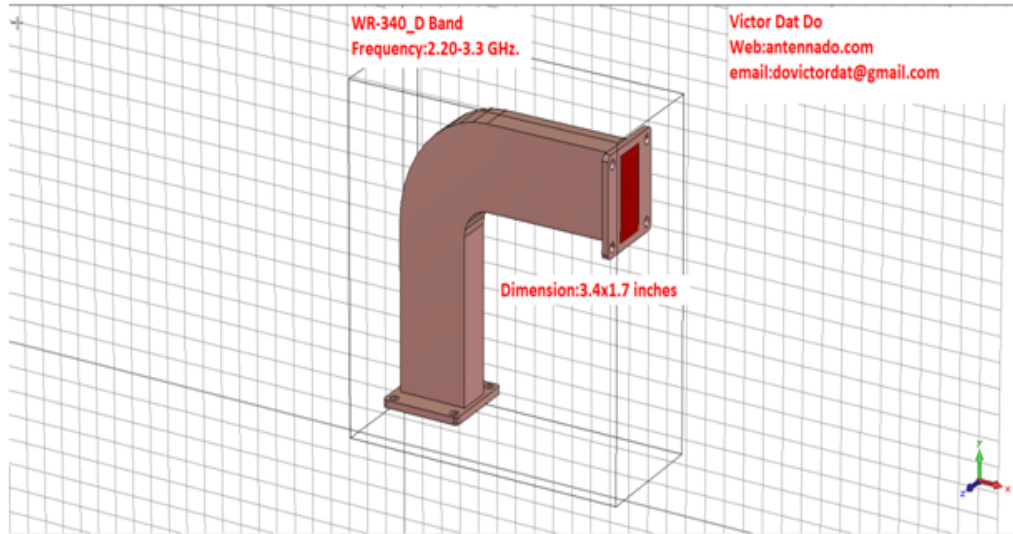


#### 4)WR-340 D-Band 90 Degree.

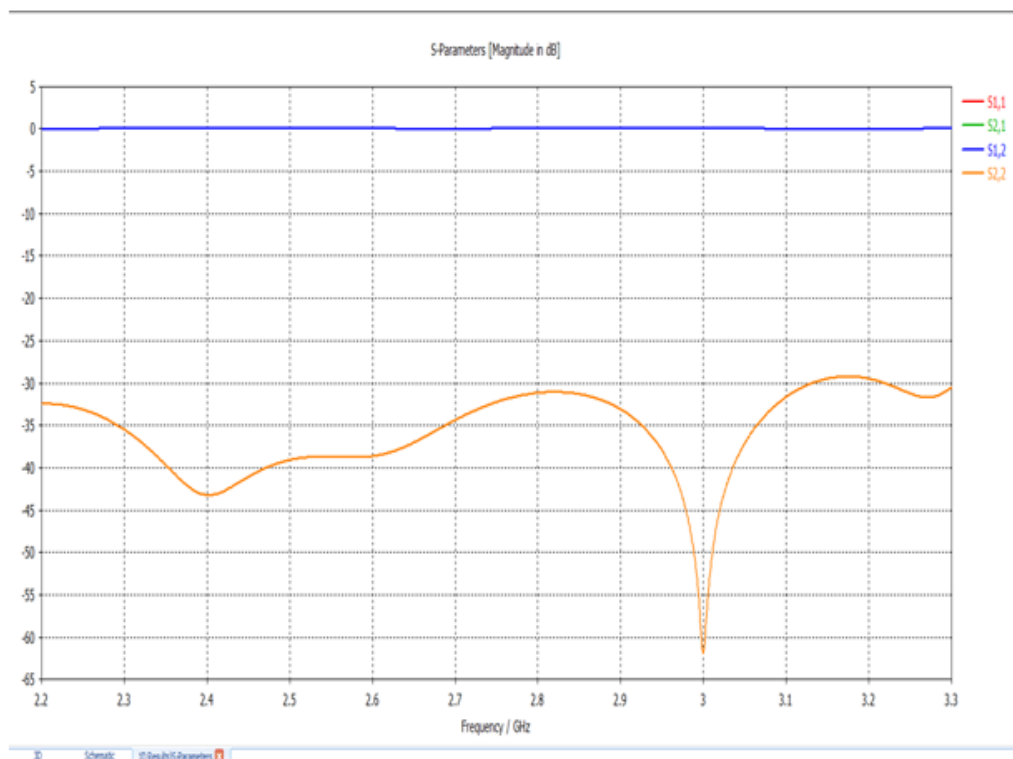


### WR-340 \_D Band\_90 Degree bend

Frequency: 2.20-3.30GHz



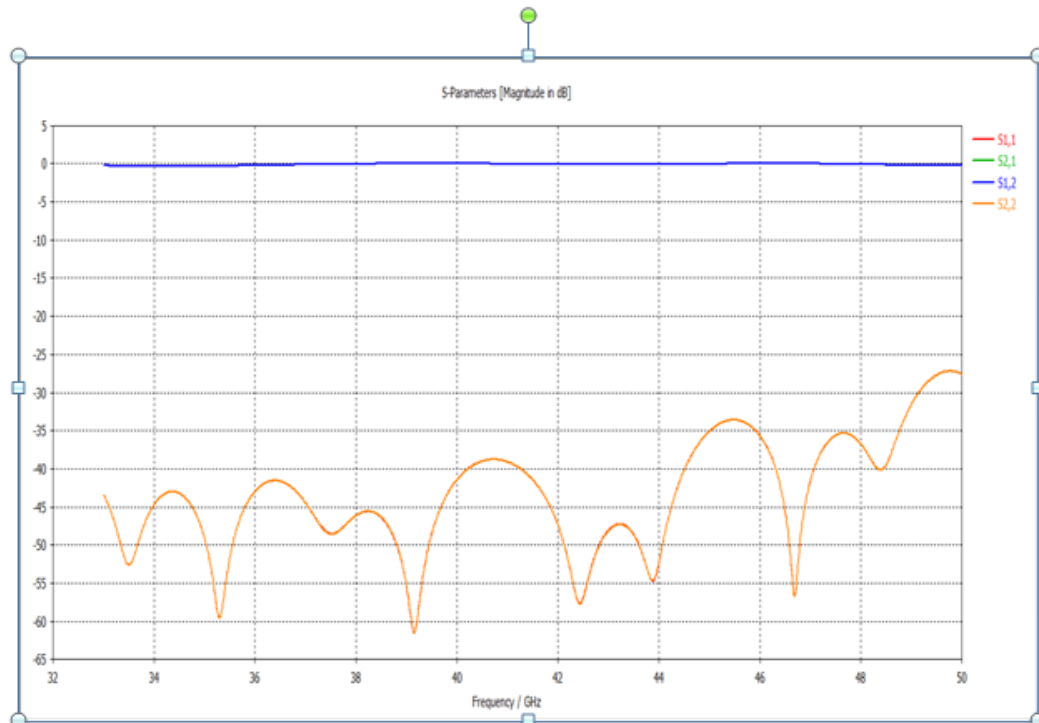
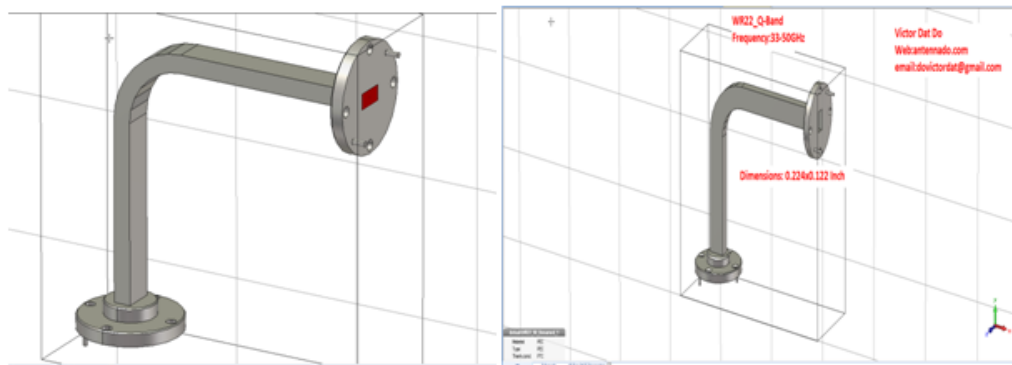
#### 1)Return loss and Insert loss



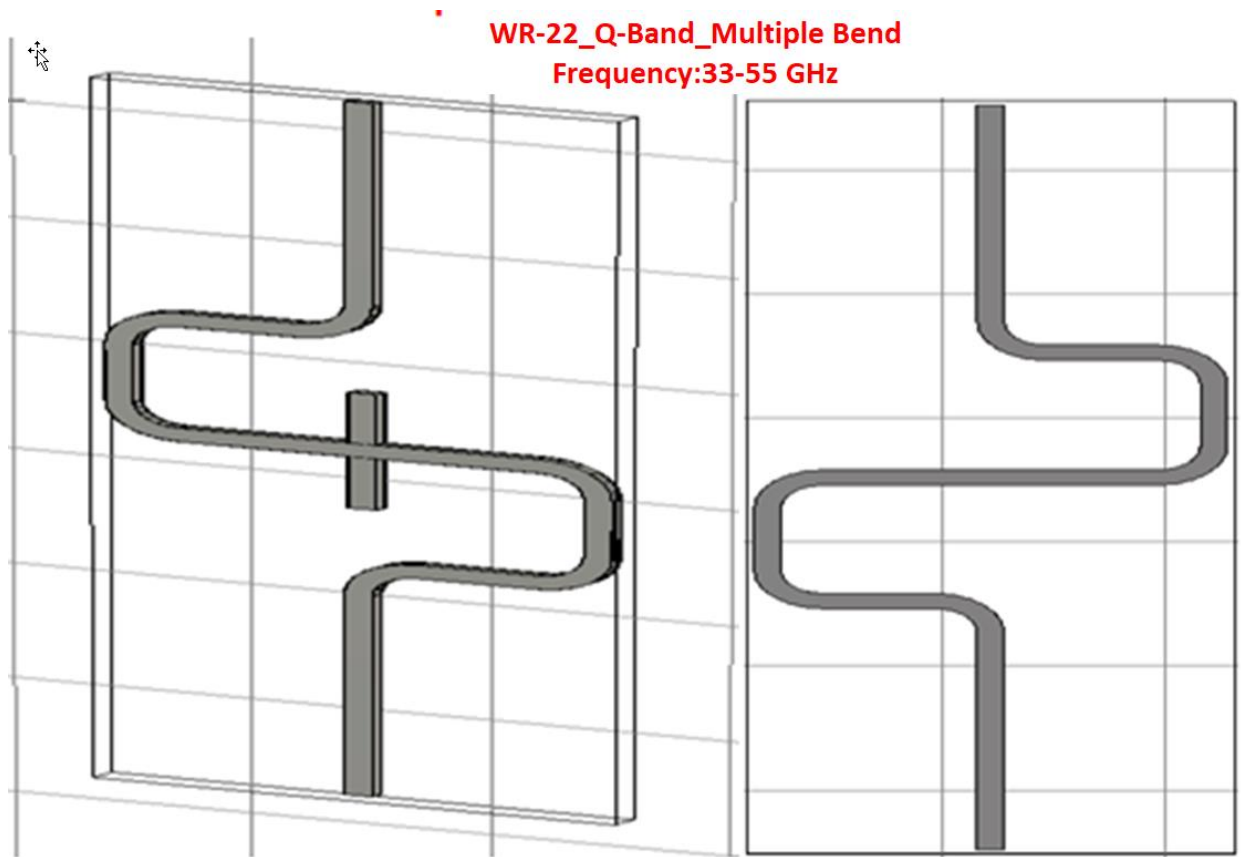
5)WR-22 Q-Band E-plane, H-plane.

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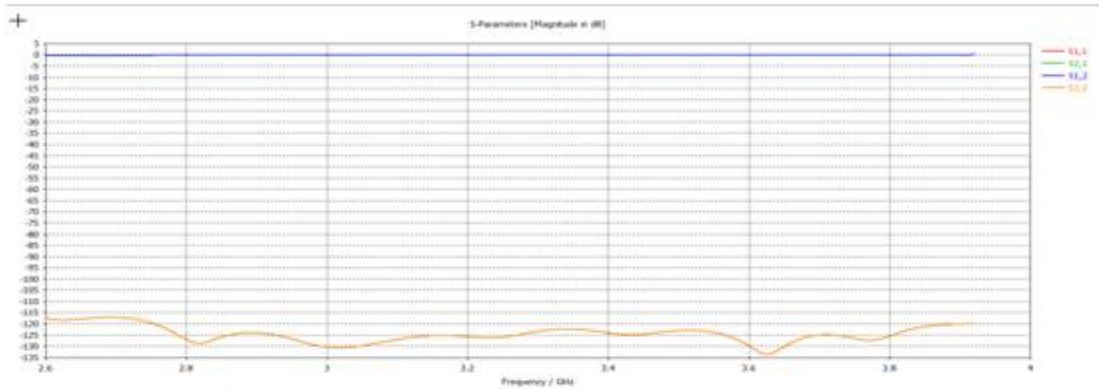
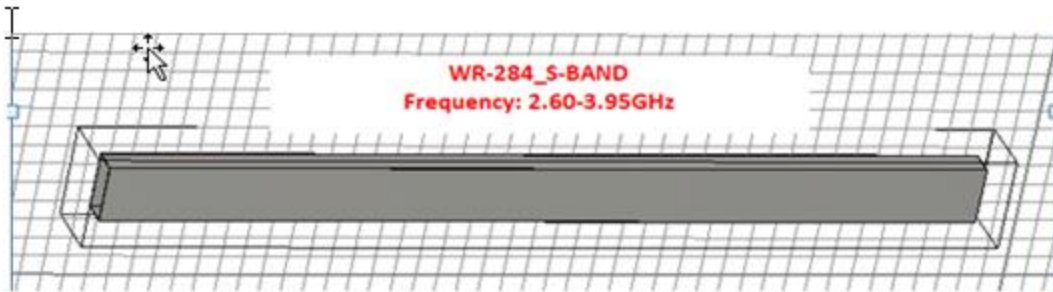
### WR22-Q-Band\_E-Plane, H-Plane Frequency: 33.0-50.0GHz



6)WR-22 Q-Band multiple bend.



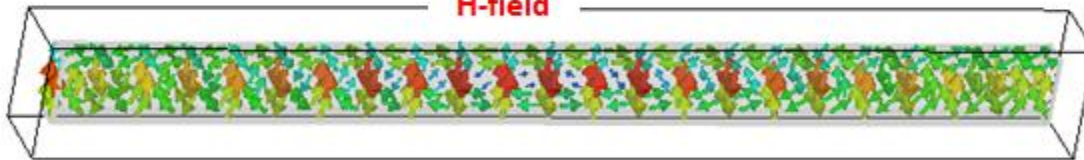
7)WR-284 S-Band.



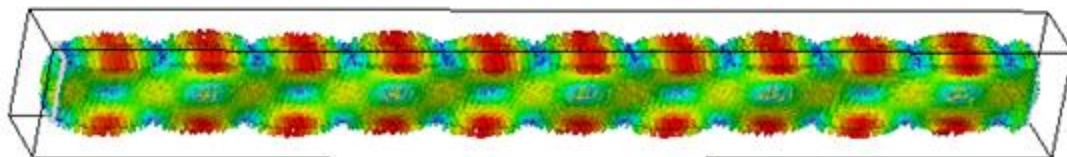
E-field



H-field

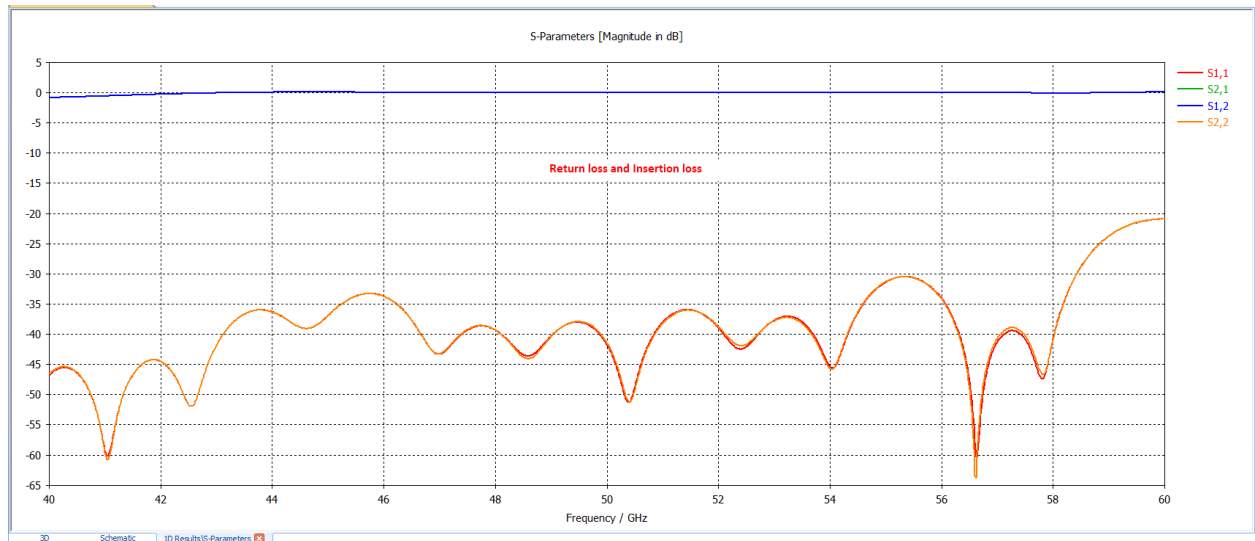
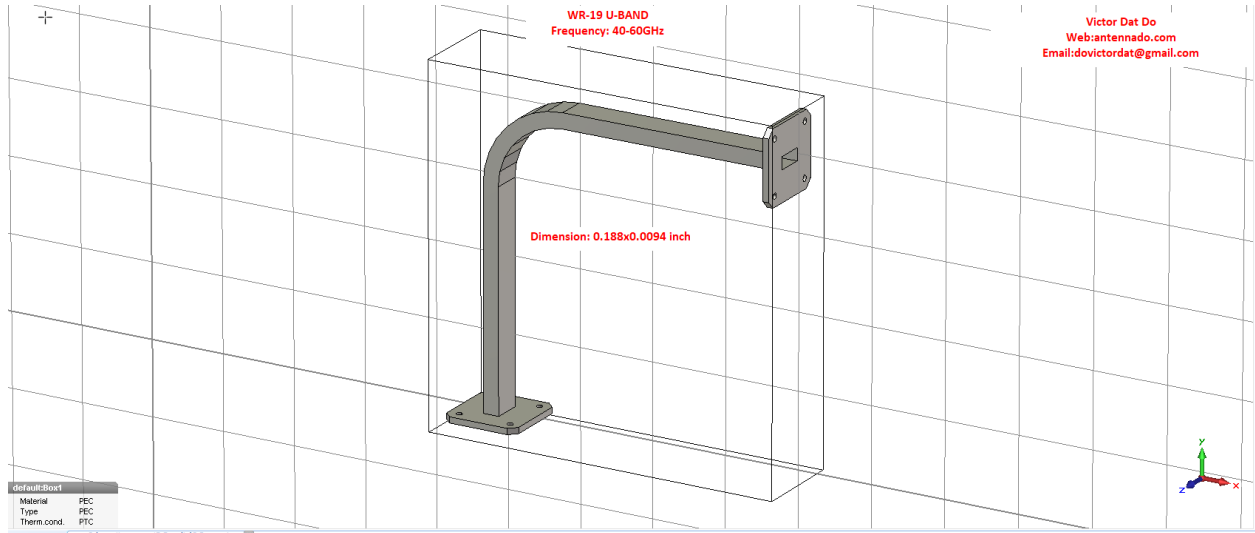


Surface current

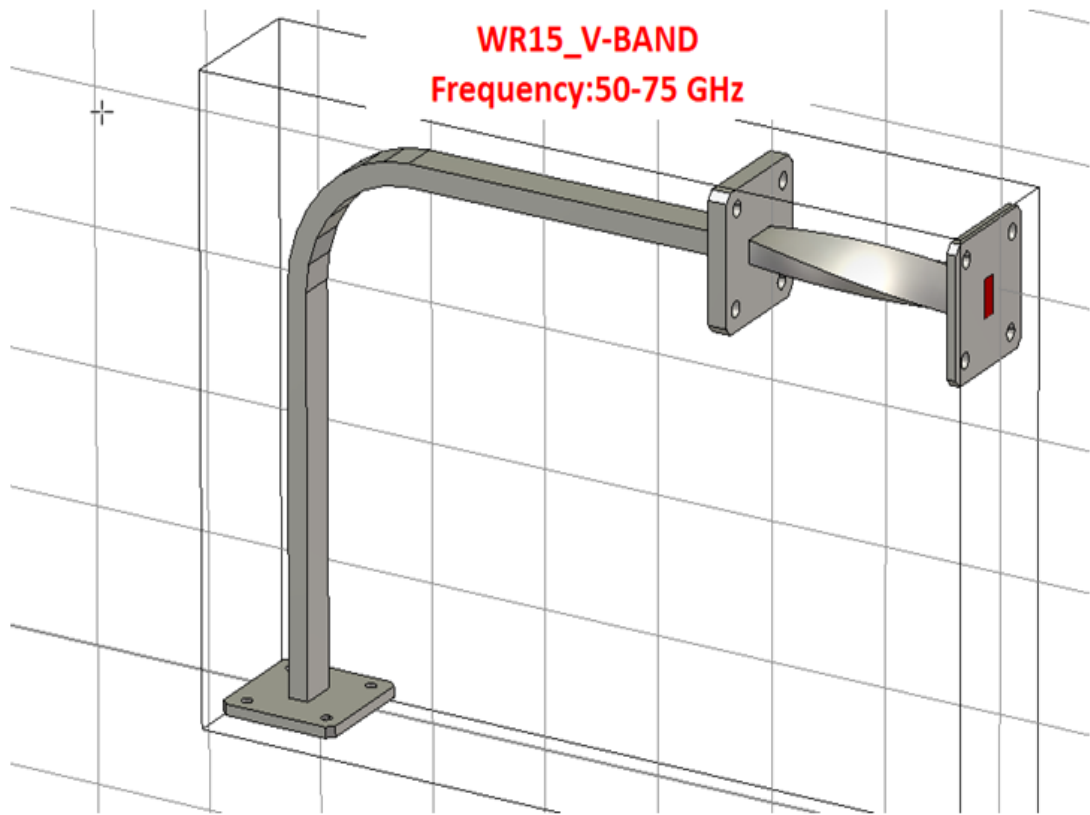


I will design Waveguide Antenna \_S-band later

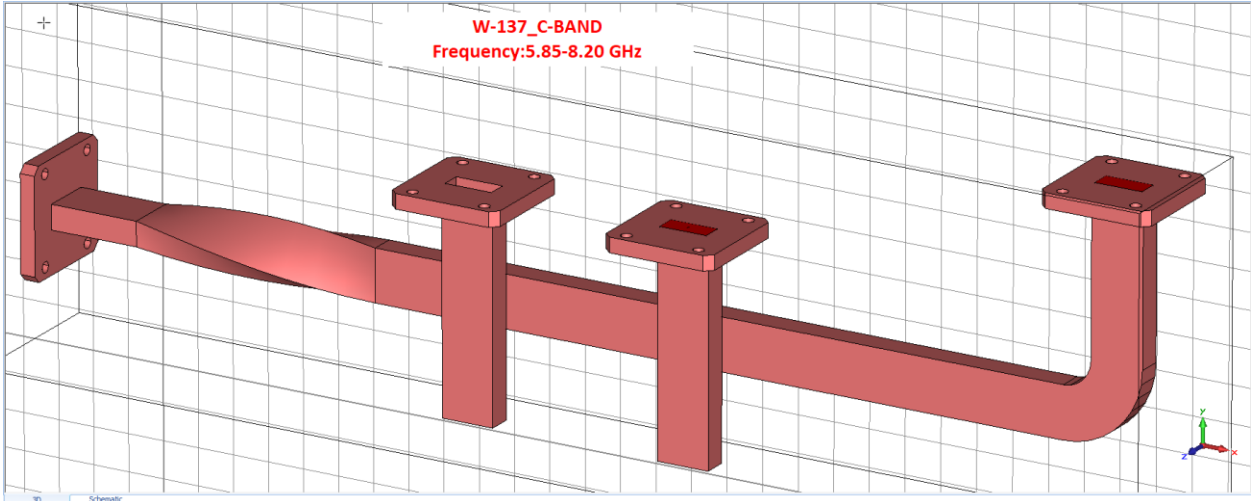
## 8) WR-19 U-Band .



## 9) WR-15 V-Band.

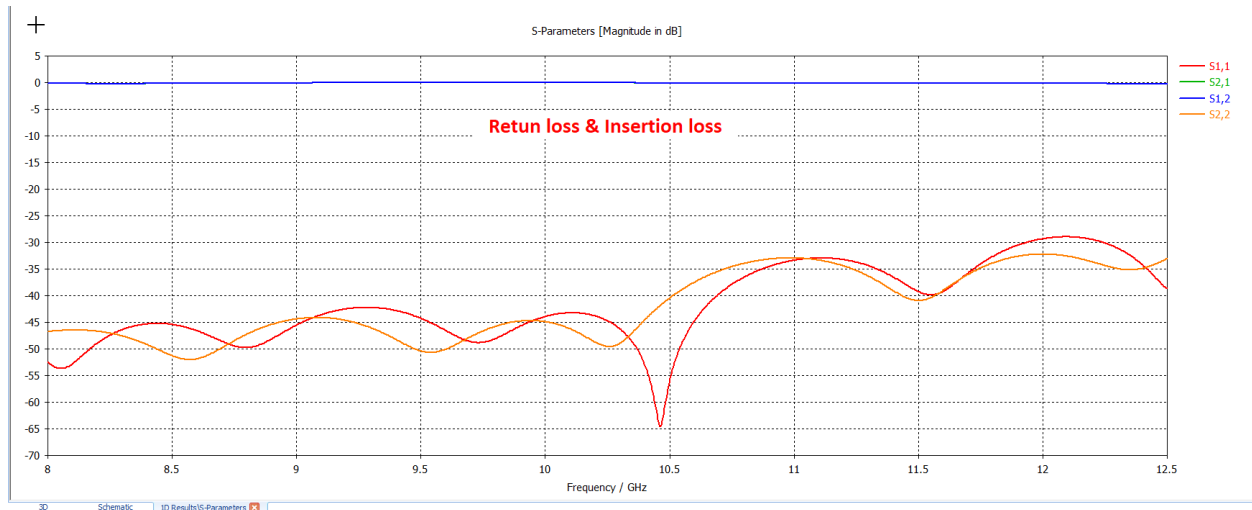
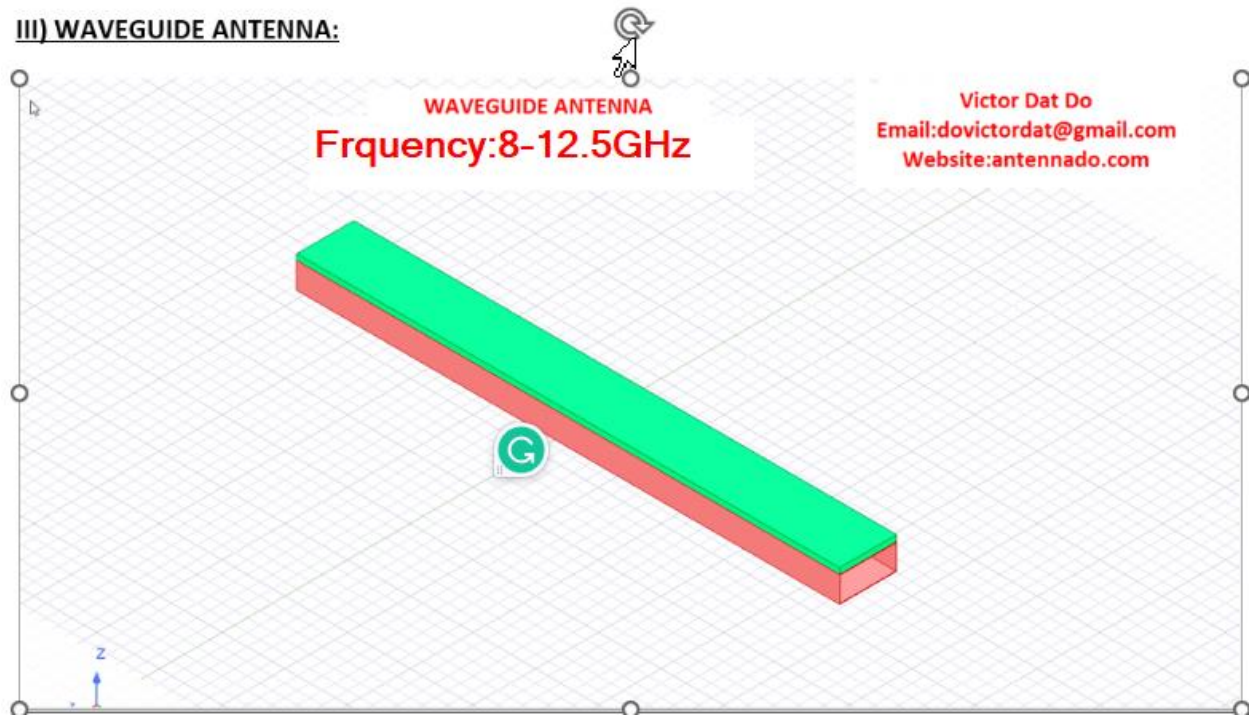


10)WR-137 C-Band Two Sections.



### III) WAVEGUIDE ANTENNA:

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### Frequency and Directivity Gain:

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