

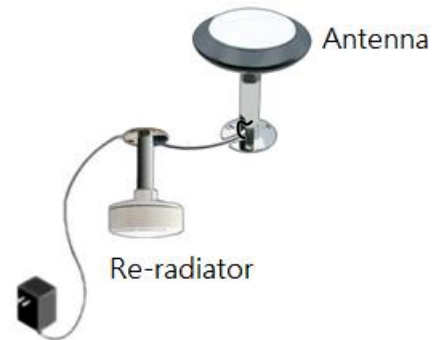
## ADA-20W



ADA-RK20



ADA-TL125



**Product Name: GPS/GLONASS/BEIDOU/GALILEO and QZSS system  
Re-radiating for Indoor Satellites Signal Reception**

**Part Number: ADA-20W**

**Features:**

- Compact size / low cost / high performance
- Permanently screw mount
- One external re-radiator for multiple, different GPS/GLONASS/BEIDOU/ GALILEO/QZSS receivers
- Real-time GPS/GLONASS/BEIDOU/GALILEO/QZSS satellites outdoor reception to an indoor environment
- Cable length extended as long as 40m RF cable
- Up to Re-radiating 30m radius in line-of-sight
- Customizable Cables and Connectors
- RoHS & REACH Compliant

**Applications:**

Satellite Re-Radiating in Labs / Retail Stores/ Factory Line

# GPS/GLONASS/BEIDOU/GALILEO and QZSS system Re-radiating for Indoor Satellites Signal Reception

## MODEL: ADA-20W Series

Rev.A

### I. Specifications:

#### (A)ADA-20W

Items	Specifications				
Passive Antenna Performance					
Application Bands	GPS L5	GPS L2	BeiDou L1	GPS L1	GLONASS L1
Frequencies (MHz)	1176	1227	1561	1575.42	1602
Efficiency (%)	7.48	6.78	54.58	43.95	29.04
Average Gain (dBi)	-11.26	-11.69	-2.63	-3.57	-5.37
Peak Gain (dBi)	-6.14	-11.69	3.24	2.48	0.69
Axial Ratio	1.34	1.29	2.24	2.16	2.38
V.S.W.R	< 2				
Return loss (dB)	< -10				
Test Condition	Free Space				
Impedance (Ω)	50				
Polarization	R.H.C.P. (Right-Handed Circular Polarization)				
Active Antenna Performance					
Application Bands	GPS L5	GPS L2	BeiDou L1	GPS L1	GLONASS L1
Frequencies (MHz)	1176 ± 5	1227 ± 5	1561 ± 5	1575.42 ± 1.023	1602 ± 5
Gain (dB)	37	38	37	39	36
Noise Figure (dB)	1.4	1.3	1.5	1.5	1.6
Operation Voltage (V)	3.3 ~ 5				
Current Consumption (mA)	20 ± 3				
Output Impedance (Ω)	50				

All specifications subject to change without notice.

Out of Band Rejection			
Frequency (MHz)	600 ~ 1100	1350~1500	1650 ~ 3000
Out of Band Rejection (dB)	57	57	66
ESD Protection	+/- 8 KV (direct discharge) +/- 15KV (air discharge)		
Mechanical			
Dimension (mm)	φ 115(D) x 68.5(H)		
Waterproof	IP67		
Connector	SMA90 (RAJ)		
Operation Temperature (°C)	-40 ~ +85		
Storage Temperature (°C)	-40 ~ +85		
Relative Humidity	95% non-condensing		

All specifications subject to change without notice.

## (B) ADA-TL125

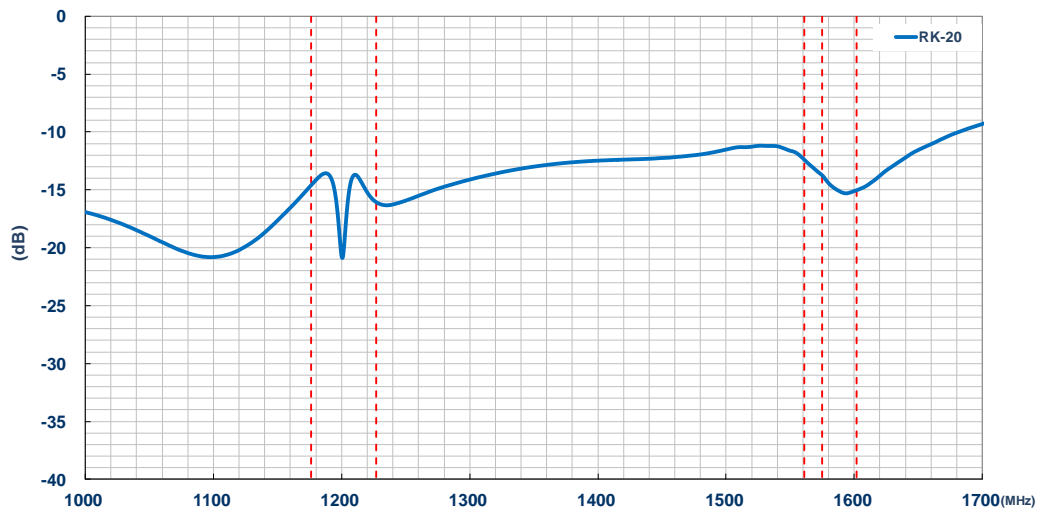
Items	Specifications				
Active Antenna Performance					
Application Bands	BeiDou L1	GPS L1	GLONASS L1	GPS L2	GPS L5
Frequencies (MHz)	1561 ±2.046	1575.42 ±1.023	1602 ±5	1227 ±11	1176.45 ±12
Gain (dB)	43.50	45	45	43	45.49
Noise (dB)	5.27	4.05	4.48	2.4	1.91
Current Consumption (mA)	23 ±5				
Polarization	R.H.C.P. (Right Handed Circular Polarization)				
Low Noise Amplifier					
Frequencies (MHz)	1561 ~ 1602		1227		1176
Gain (dB) (typical)	43		43		45
Noise Figure (dB) (typical)	4.5		2.4		1.9
Supply Voltages (V)	3.3 ~ 15 DC				
Output V.S.W.R	2.0 max.				
Output Impedance (Ω)	50				

Out of Band Rejection						
Application Bands	L1		L2		L5	
Frequencies (MHz)	600~ 1500	1670~ 3000	600~ 1000	1660~ 3000	600~ 1000	1660~ 3000
Out of Band Rejection (dB)	65	75	65	75	65	75
ESD Protection						
Contact Discharge (KV)	± 8					
Air Discharge (KV)	± 15					
Cable and Connector						
Cable	RG-58 (Length is suggested between 3~5M)					
Connector	TNC (SBJ)					
Mount	5/8 inch female thread					
Physical Condition						
Dimension (mm)	φ140(D) x 49(H)					
Weight (g)	407					
Environmental Conditions						
Operation Temperature	-40 ~ +85 °C					
Storage Temperature	-40 ~ +85 °C					
Waterproof Resistant	IP67					
Relative Humidity	+40±2 °C,90~95% R.H					
Electronic Discharge	EN61000-4-2: 20KV Air-discharge ; 8KV Contact-discharge					
Enclosure Rating	IEC 60529 standard: IP67					
Solar Radiation	MIL-STD 810E, SAE 1961					
Mechanical Shock	MIL-STD-810G, Method 516.6 a. Procedure I, Functional shock					
Vibration	Antenna Non-Working 5G/30min Antenna Working 2.5G/30min					
Chemical Resistance	Alcohol 、 Plastic and Vinyl cleaner 、 Glass cleaner 、 Saline Solution 、 Soapy water					

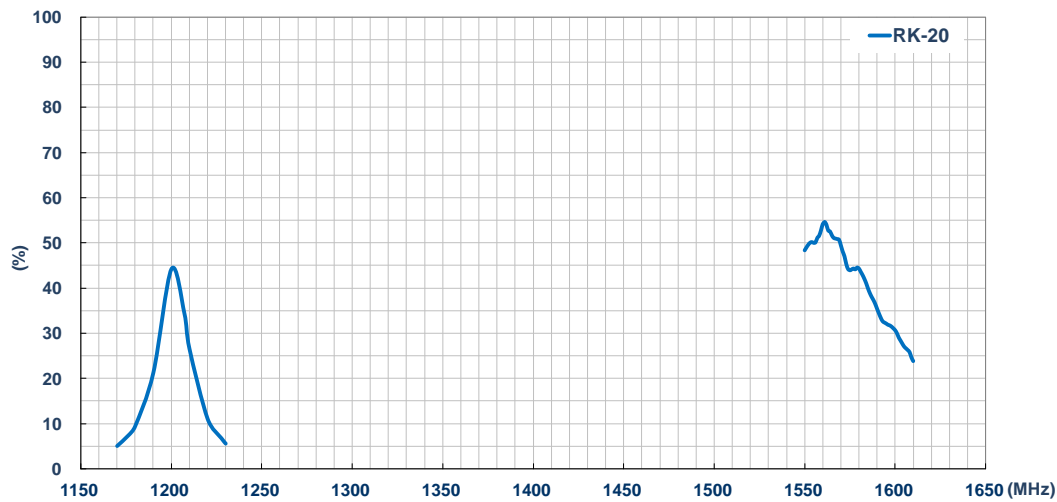
II. Electrical Properties:

(A)ADA-RK20

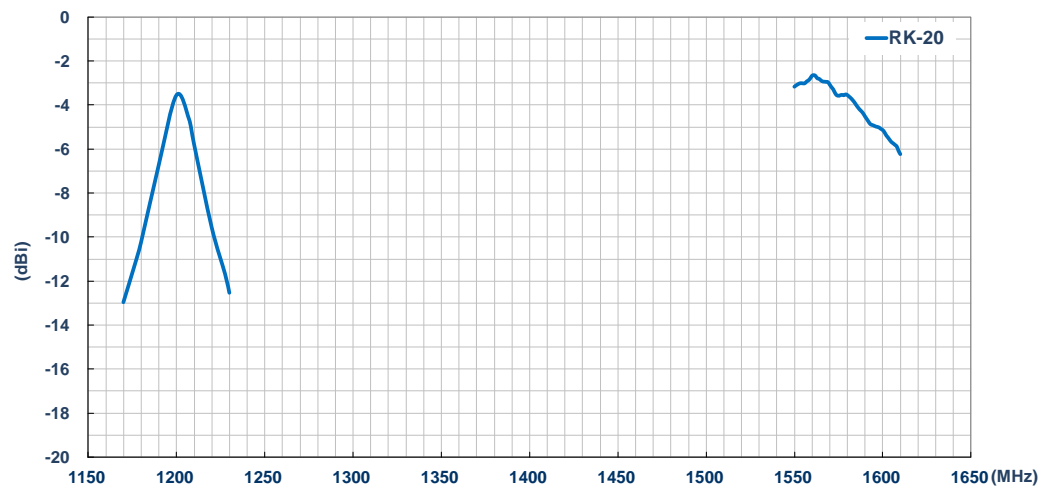
S11 (dB)



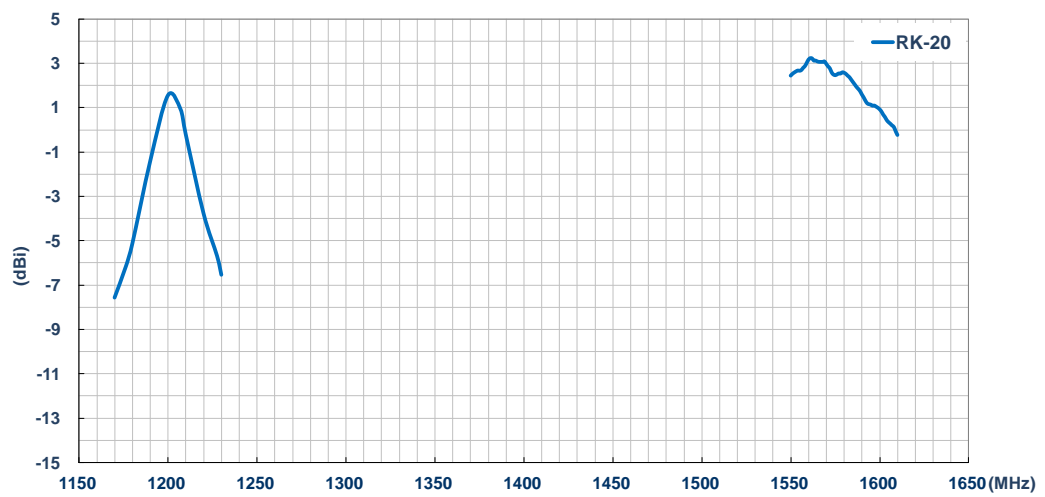
Efficiency (%)



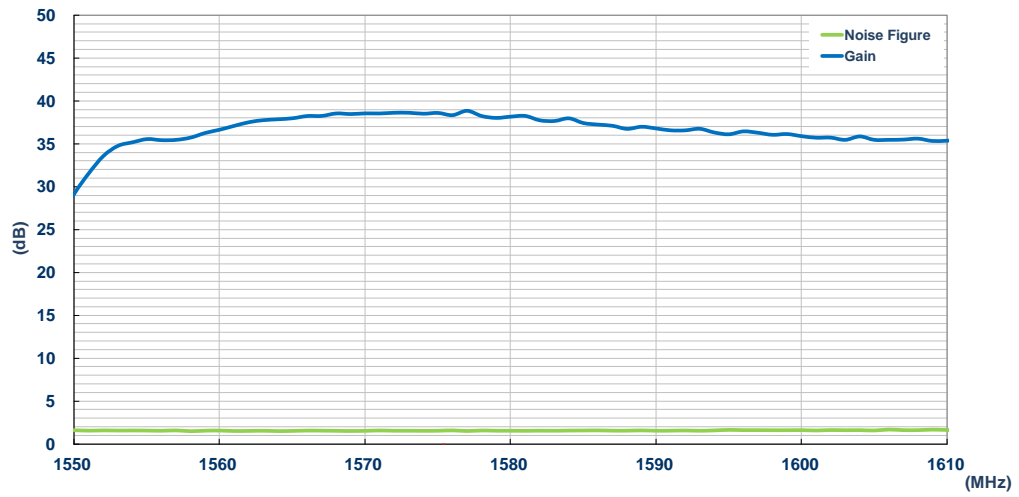
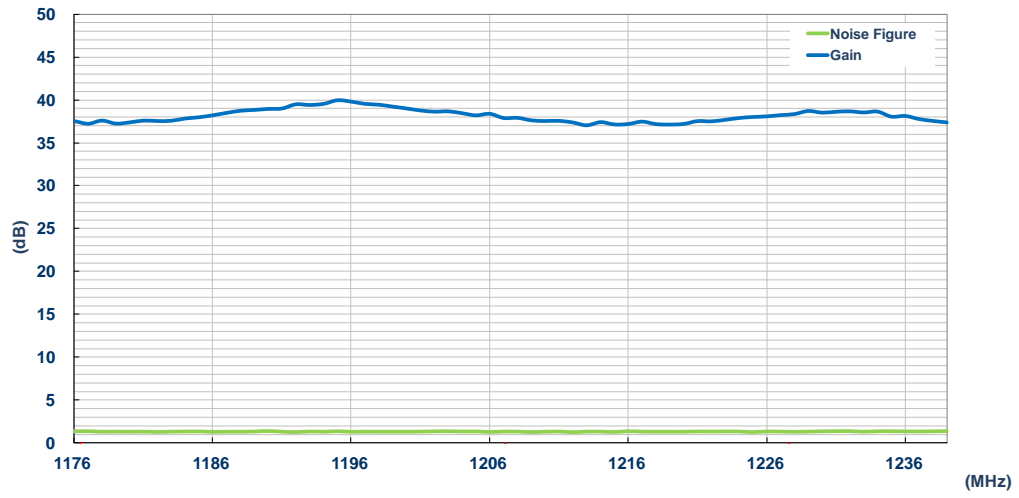
Average Gain (dBi)



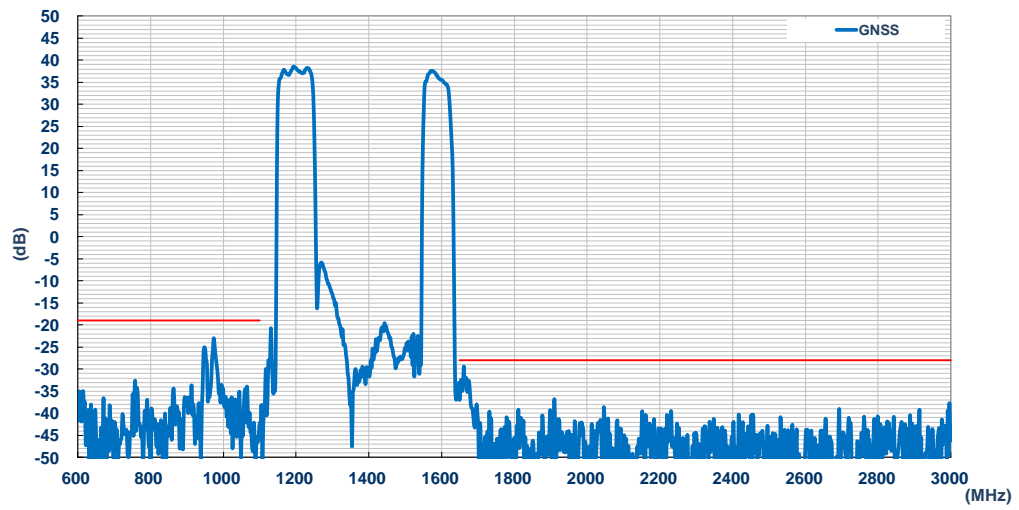
Peak Gain (dBi)



Noise Figure & Gain (dB)

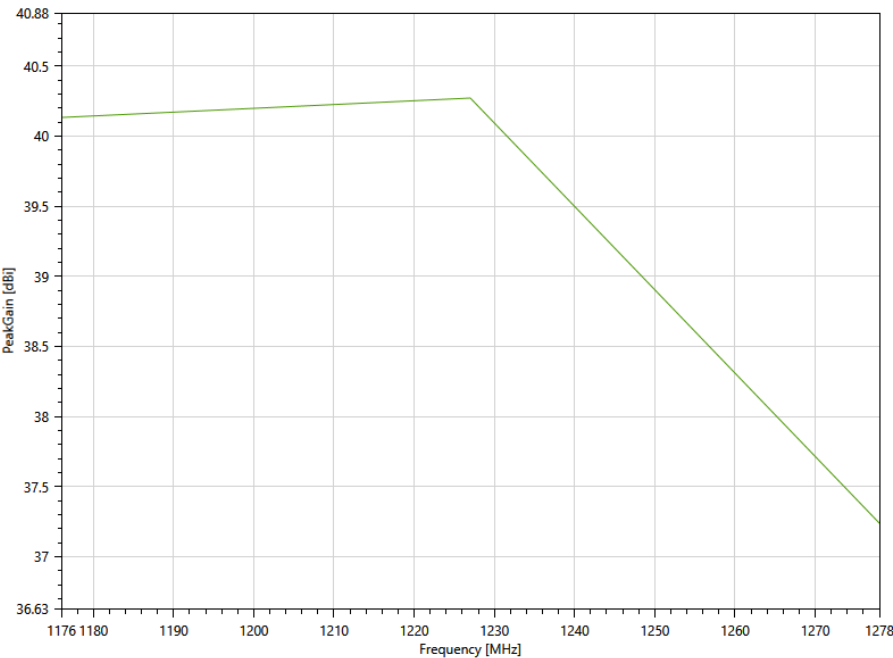


Out of Band Rejection (dB)

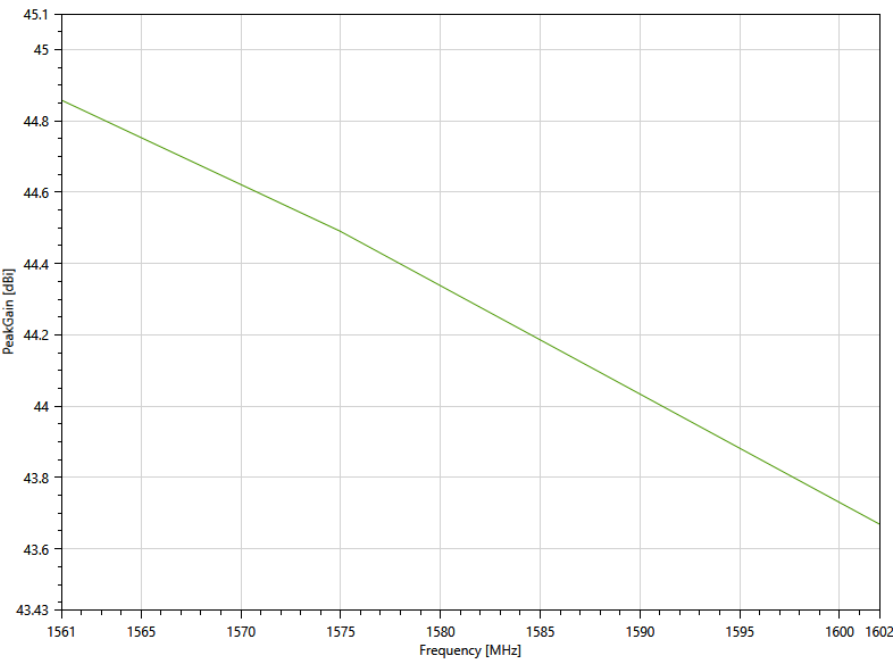


**(B)ADA-TL125**

1164 MHz ~ 1283 MHz Peak Gain

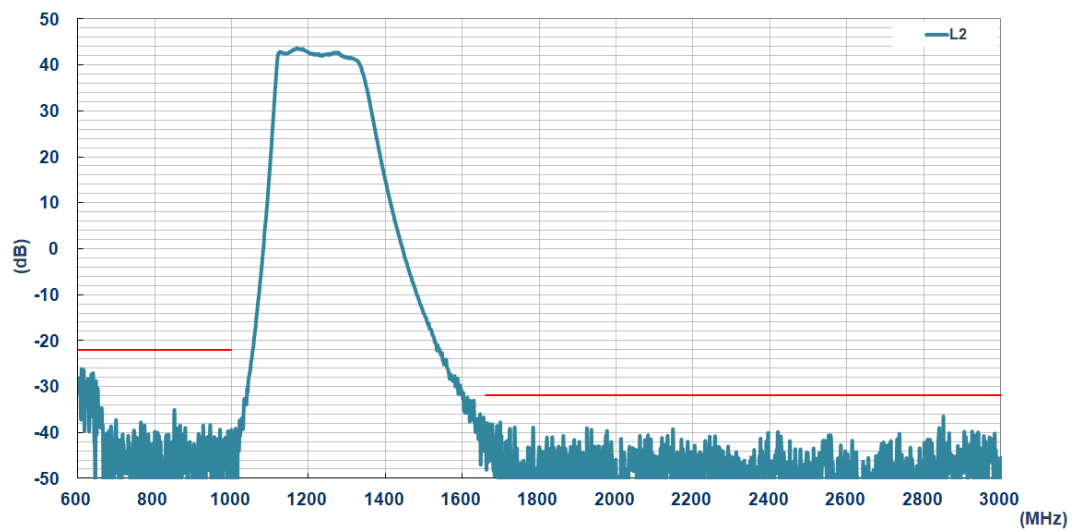
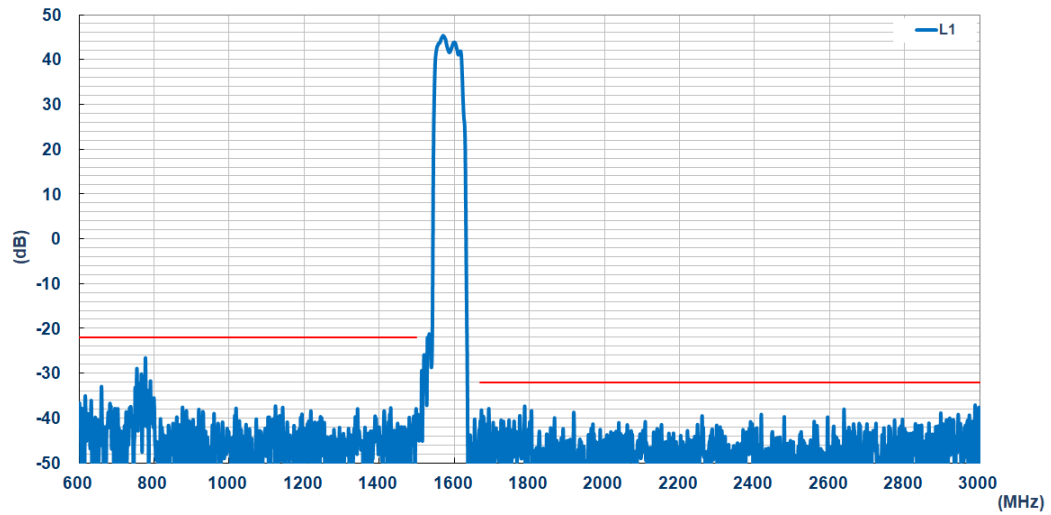


1559 MHz ~ 1610 MHz Peak Gain

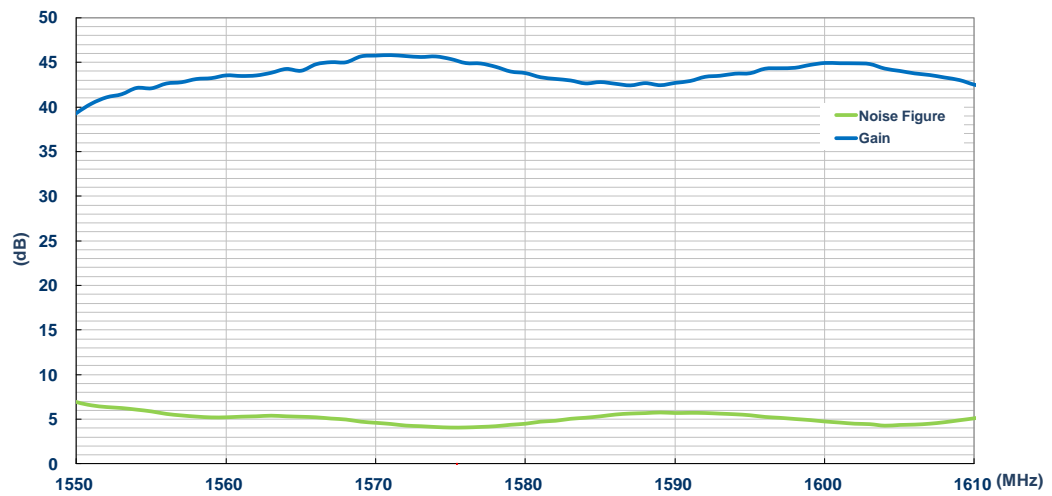
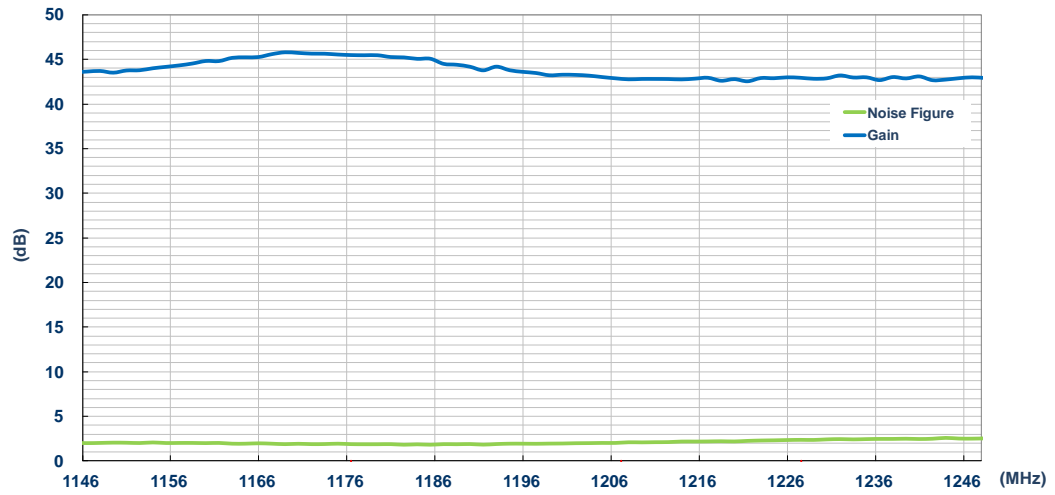




## Out of Band Rejection (dB)



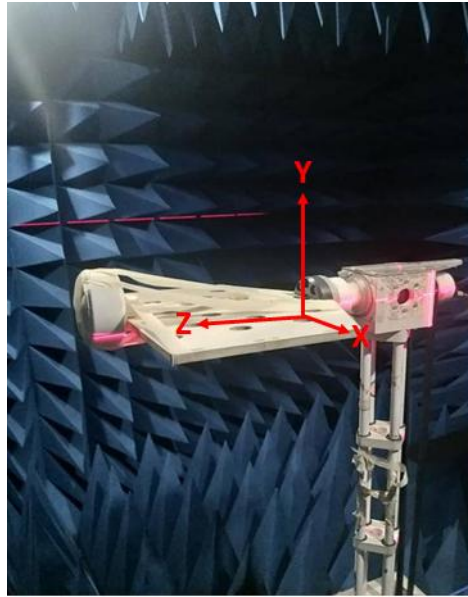
## Noise Figure & Gain (dB)



### III. Antenna Radiation Pattern Measurement:

The antenna radiation patterns are measured in 3D Anechoic Chamber.  
The measurement setup is as show below,

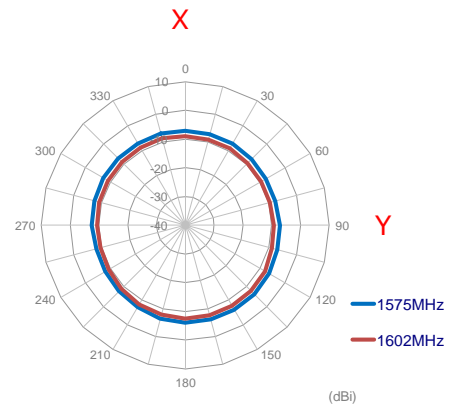
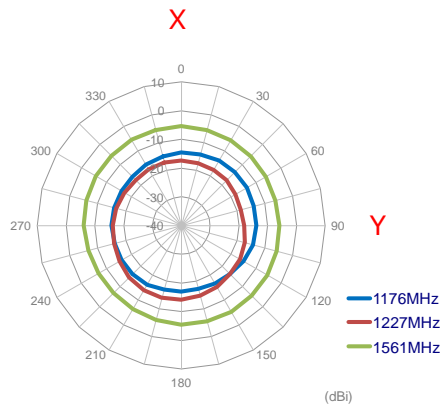
#### ADA-RK20



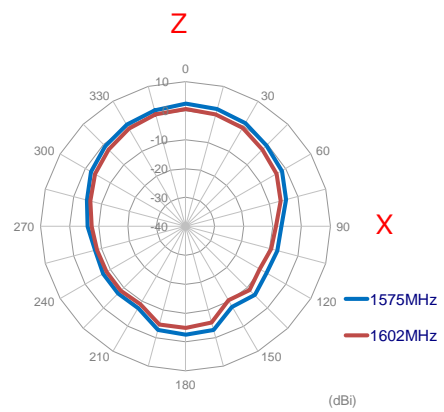
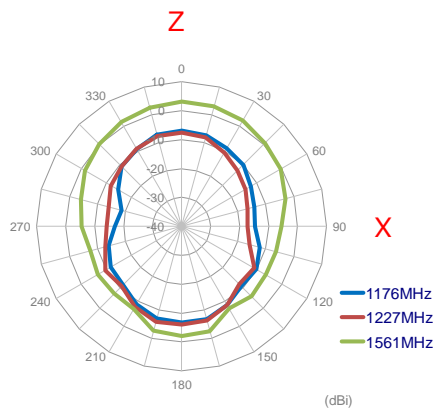
## A) 2D Radiation Pattern:

### ADA-RK20

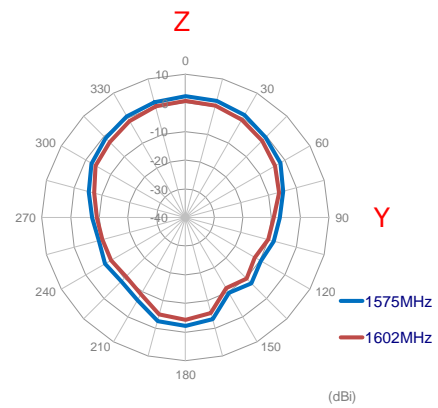
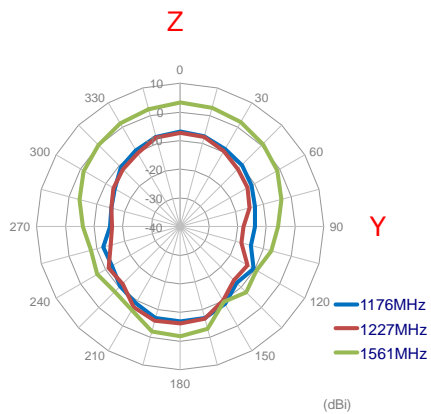
#### X-Y Plane



#### X-Z Plane



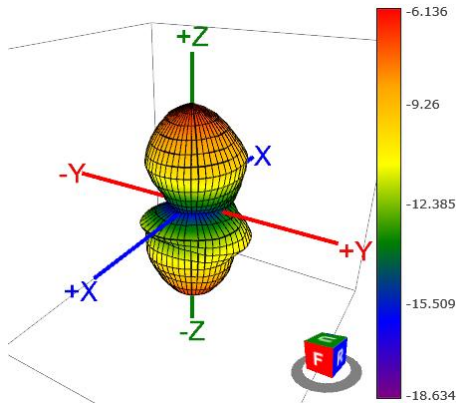
#### Y-Z Plane



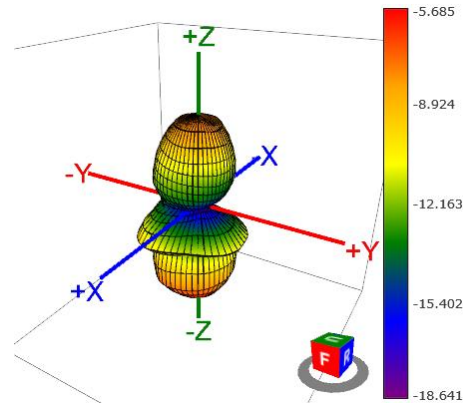
## B) 3D Radiation Pattern:

### ADA-RK20

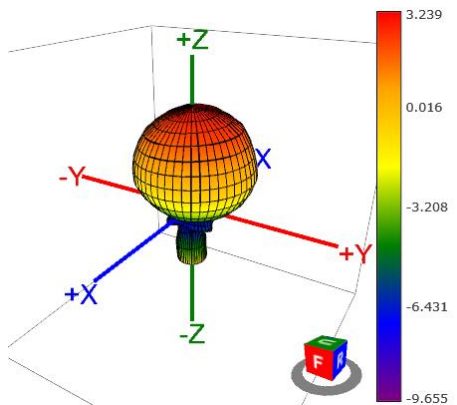
1176MHz



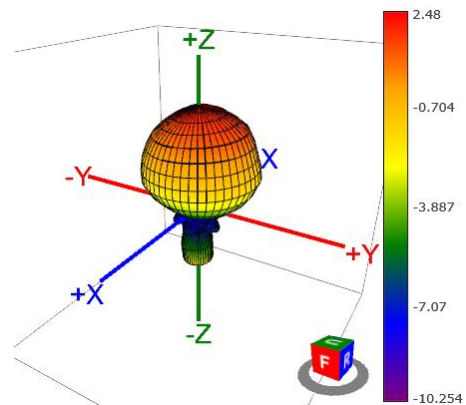
1227MHz



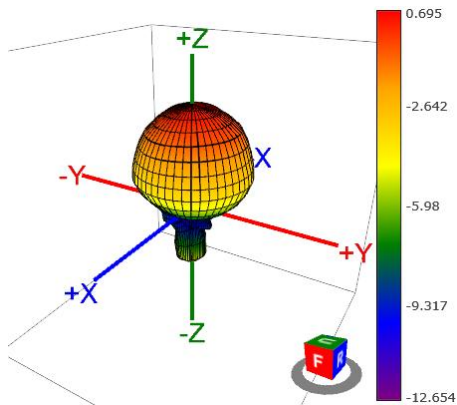
1561MHz



1575.42MHz

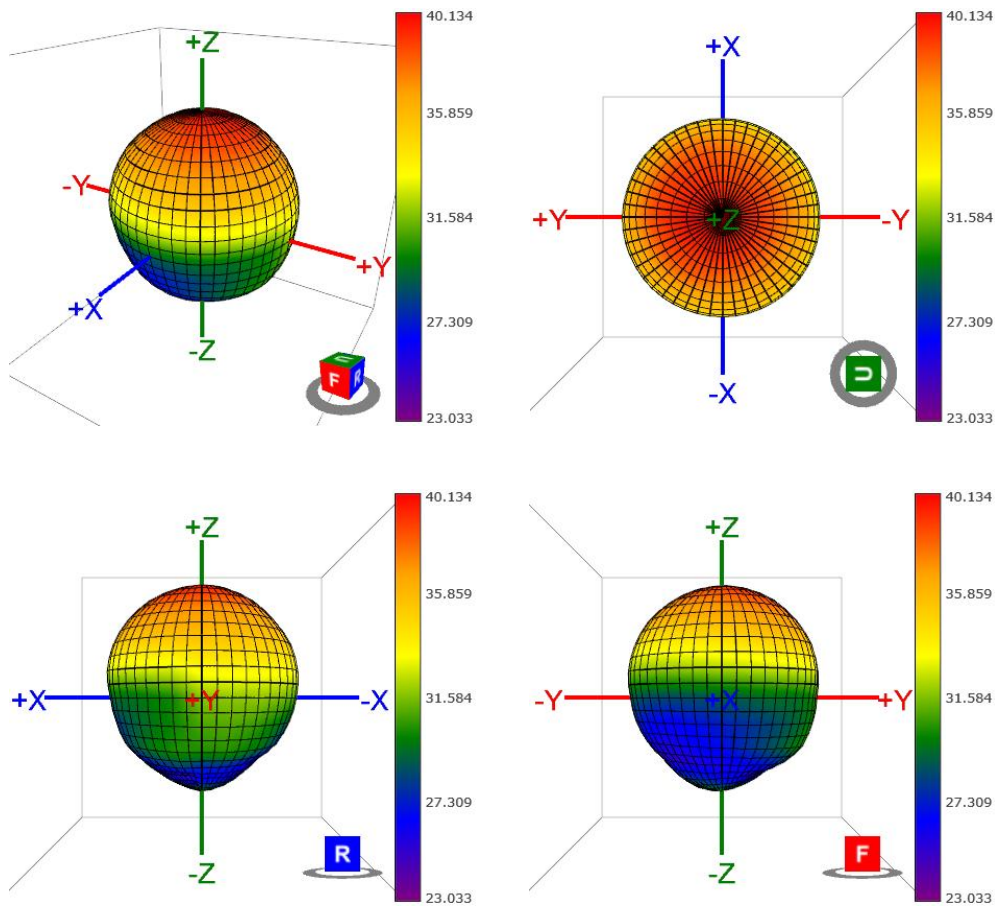


1602MHz

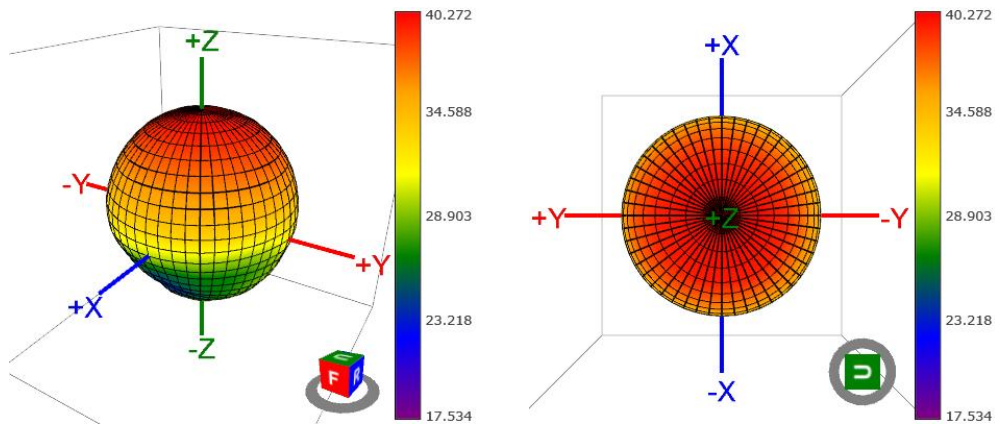


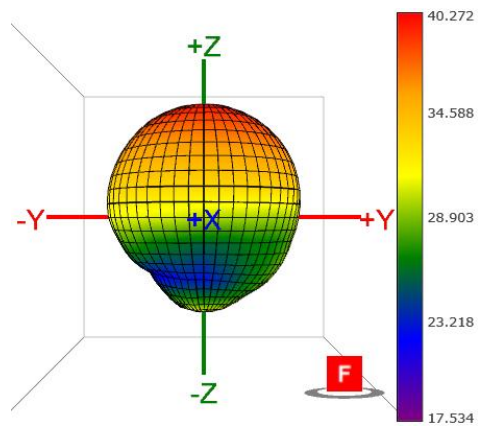
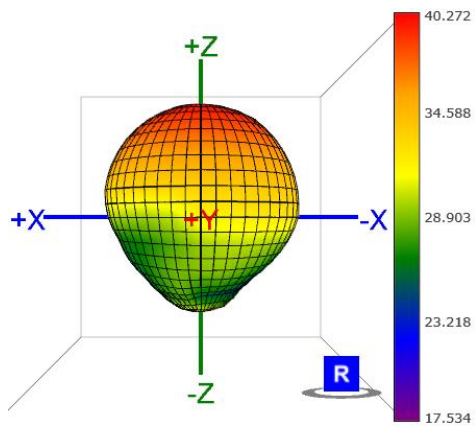
**TL-125**

1176MHz

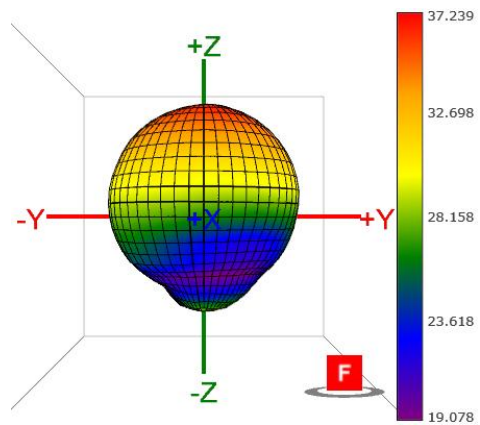
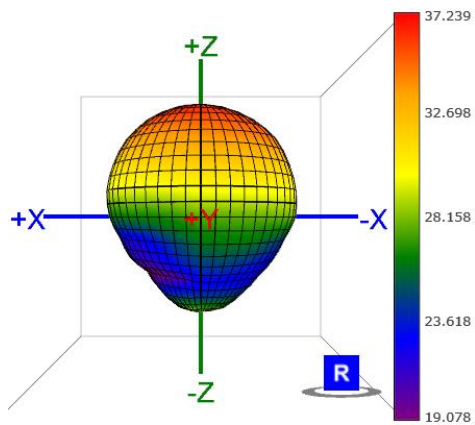
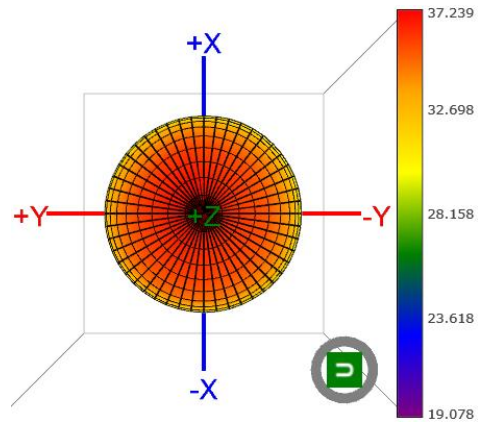
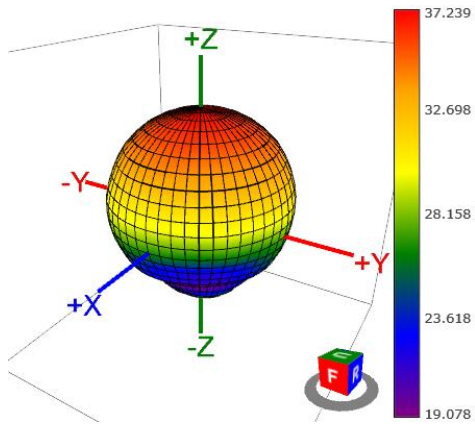


1227MHz



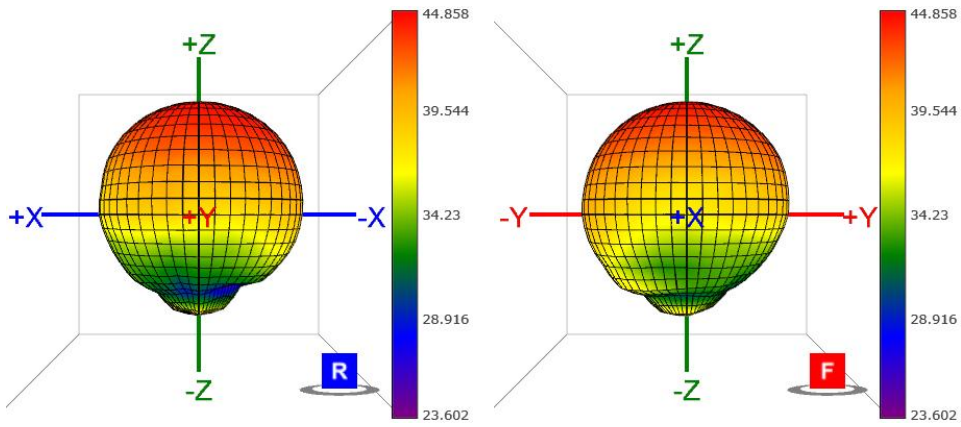
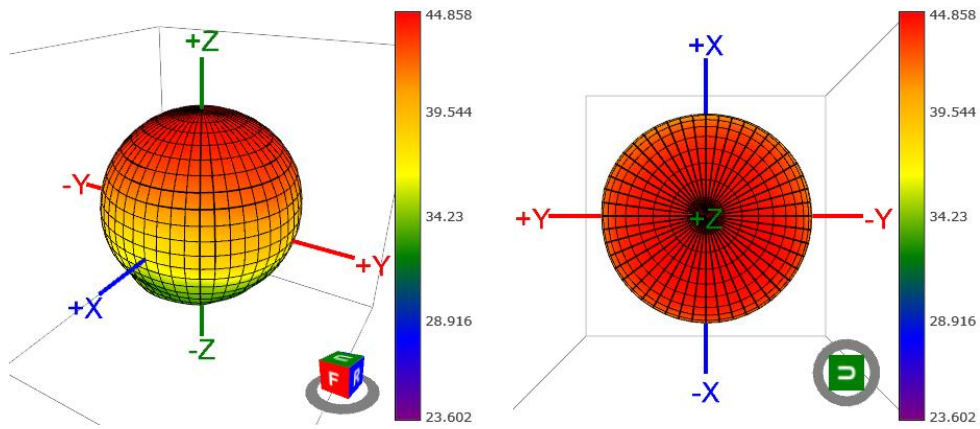


1278MHz

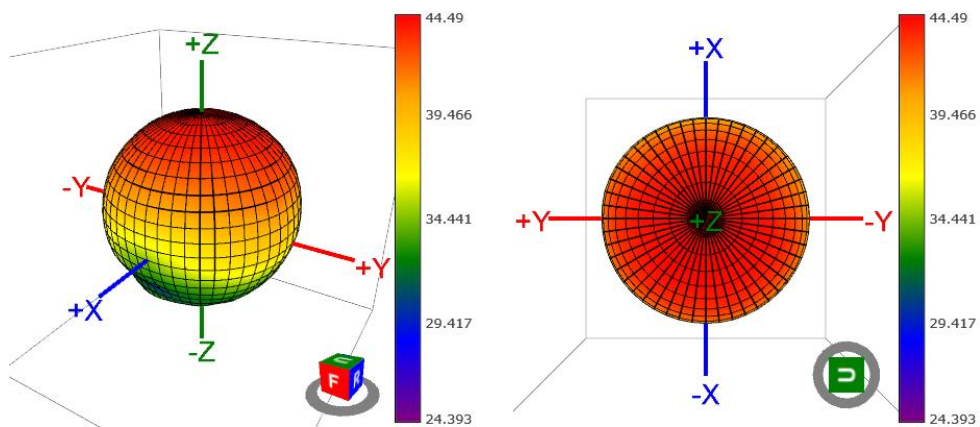




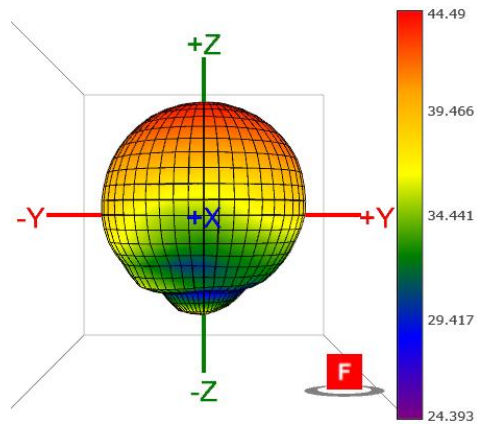
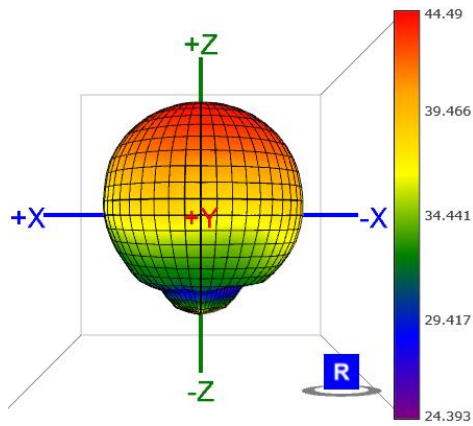
1561MHz



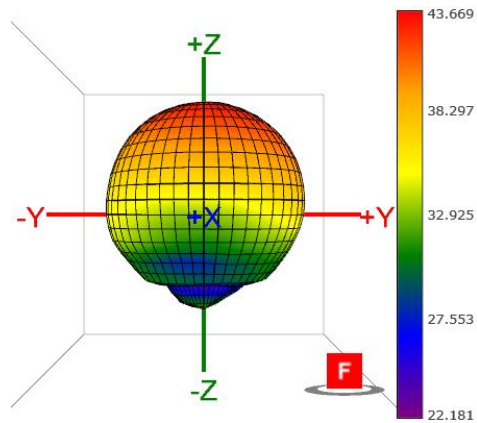
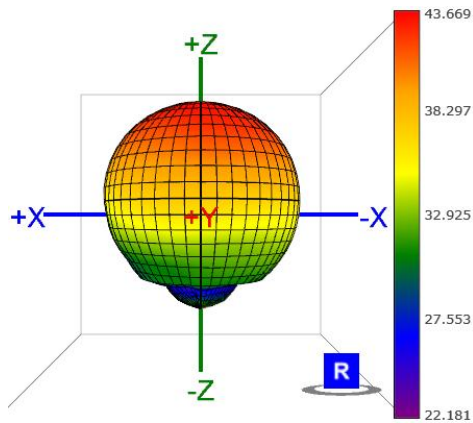
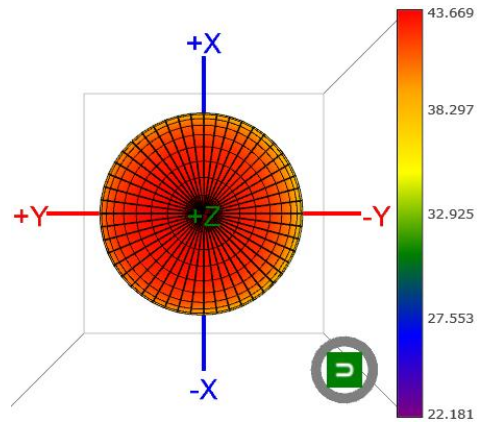
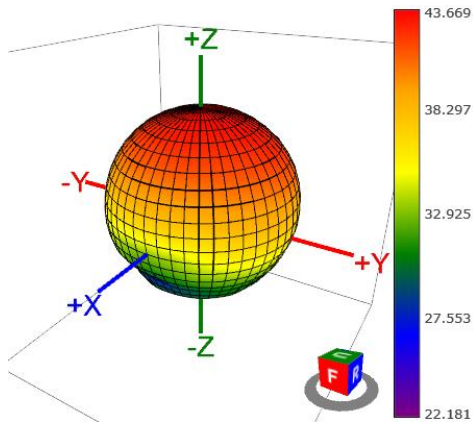
1575MHz





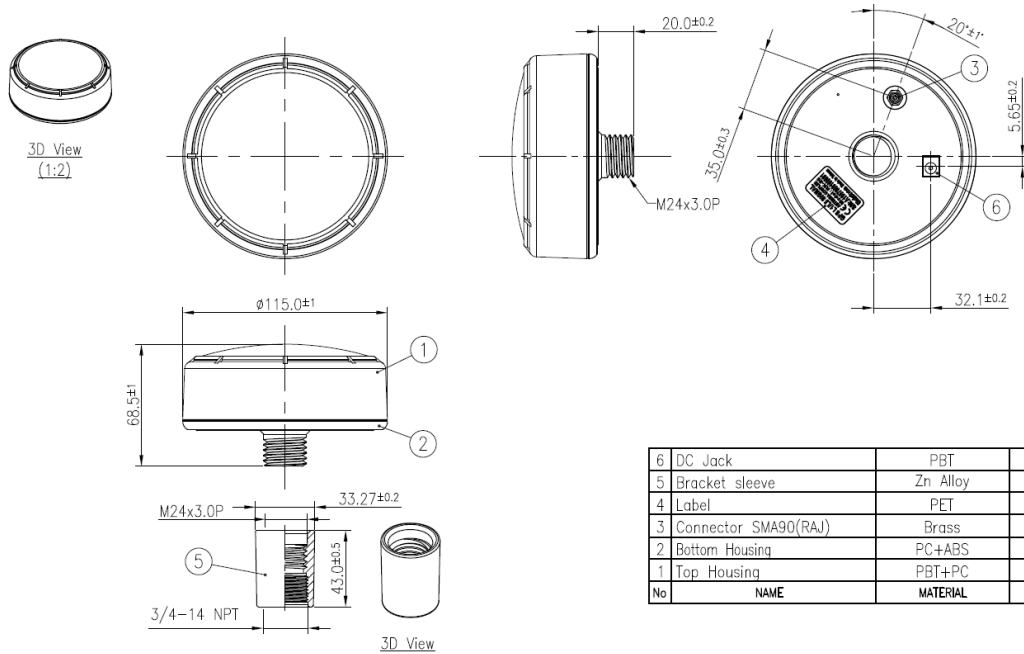


1602MHz



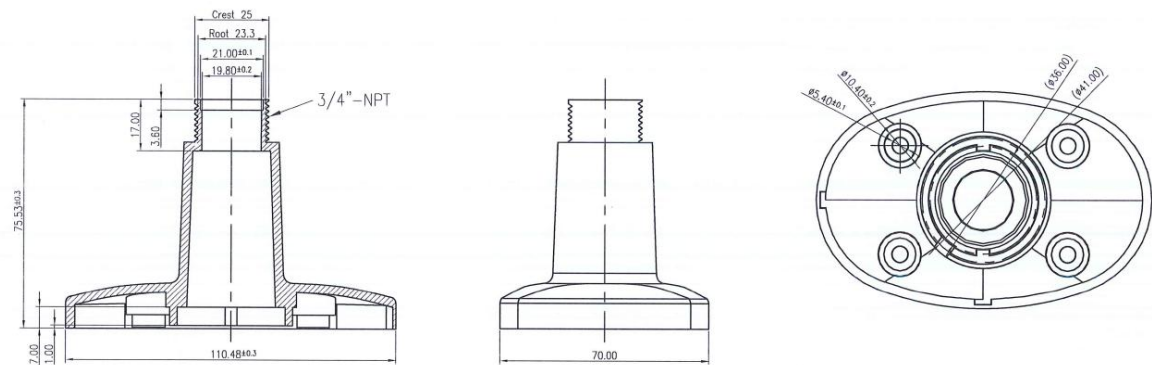
## IV. Mechanical Drawing (Unit:mm):

### ADA-RK20

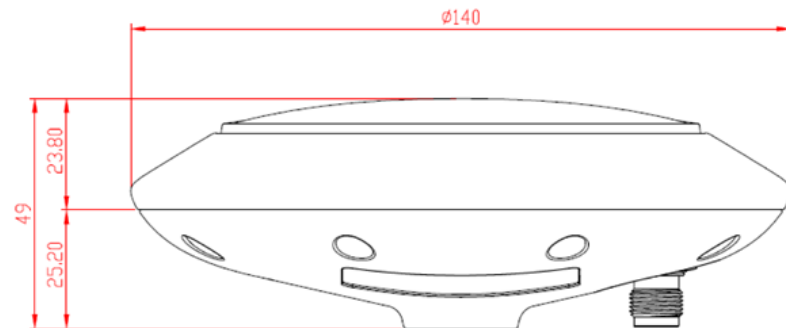


6	DC Jack	PBT	Black	1
5	Bracket sleeve	Zn Alloy	Ni Plating	1
4	Label	PET	Silver	1
3	Connector SMA90(RAJ)	Brass	Au Plated	1
2	Bottom Housing	PC+ABS	White	1
1	Top Housing	PBT+PC	White	1
No	NAME	MATERIAL	FINISH	QTY

### ADA-RK20 Bracket

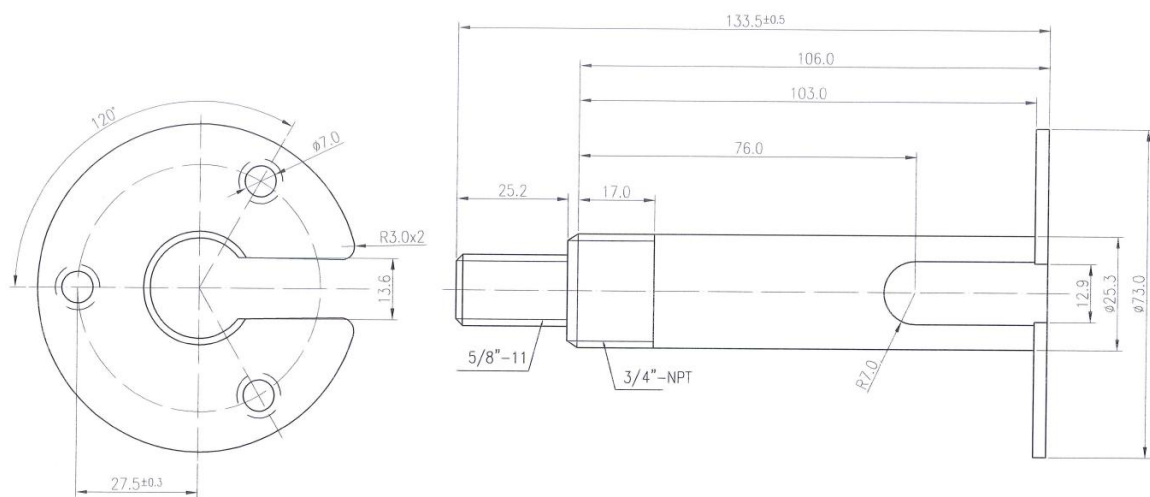


## ADA-TL125

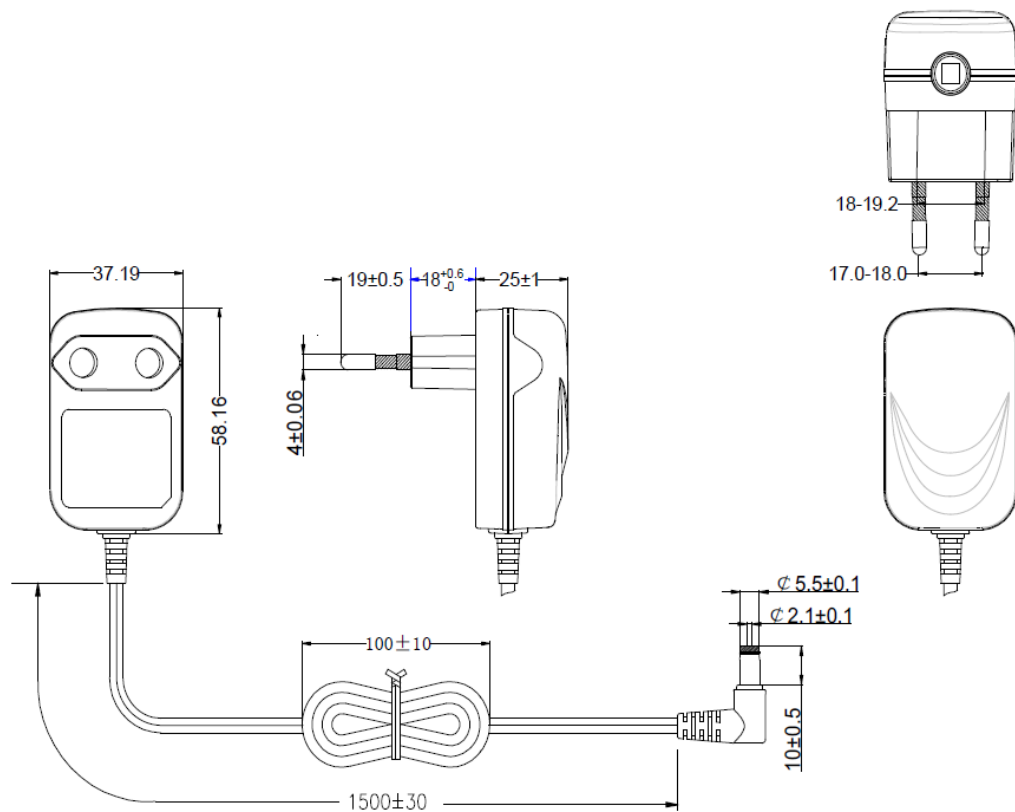


All specifications subject to change without notice.

## ADA-TL125 Steel tube seat



## Regulator



All specifications subject to change without notice.

## V. Package Include

	<p><b>Antenna x 1</b></p> <ul style="list-style-type: none"> <li>• 140mm (dia.) x 49mm</li> </ul>
	<p><b>Steel tube seat</b></p> <ul style="list-style-type: none"> <li>• Height: 133.5mm</li> </ul>
	<p><b>RG58 Cable x 1</b></p> <ul style="list-style-type: none"> <li>• Standard 40meters</li> <li>• SMA(SP) to TNC(SP) Connector</li> </ul>

All specifications subject to change without notice.

 <p>The image shows a white, cylindrical re-radiator component. The top view shows a flange with a central protrusion. The bottom view shows a circular base with a central threaded hole, a small black square component, and a small gold-colored component. A label on the bottom view reads: "GPS L1/L2/L5 SIGNAL", "INTERNAL COUPLER", "CE", "Model: RM-20", "S/N: C2012002900022", "Unicontron Made in Taiwan".</p>	<p><b>Re-radiator x 1</b></p> <ul style="list-style-type: none"> <li>• 115mm (dia.) x 68.5mm (H)</li> </ul>
 <p>The image shows a white, cylindrical bracket component. It has a threaded top section and a flange base with four mounting holes. The flange base has the text "500" printed on it.</p>	<p><b>Bracket x 1</b></p> <ul style="list-style-type: none"> <li>• 110.48mm (dia.) x 75.53mm (H)</li> <li>• PC+PBT / anti-UV</li> </ul>
 <p>The image shows a black, rectangular power regulator component. It has a two-pronged plug on top and a coiled cable with a connector on the bottom. The label on the bottom view reads: "UNICONTRON", "GPS L1/L2/L5 SIGNAL", "INTERNAL COUPLER", "CE", "Model: RM-20", "S/N: C2012002900022", "Unicontron Made in Taiwan".</p>	<p><b>Regulator x 1</b></p> <ul style="list-style-type: none"> <li>• 58.16mm (L) x 37.19mm (W) x 25mm (H)</li> <li>• Country dependent plug types</li> </ul>