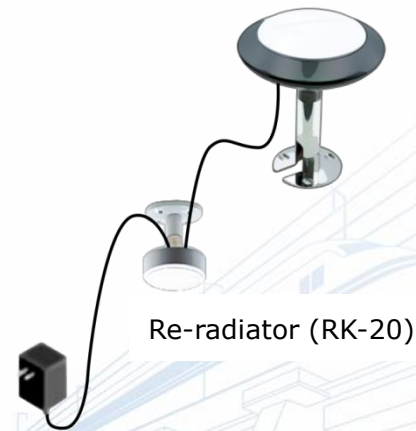


Antenna (TL-125)



Re-radiator (RK-20)



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

Part Number: RK-20W Series

Features:

- Compact size / low cost / high performance
- Permanently screw mount
- One external re-radiator for multiple, different GPS/ GLONASS/ BEIDOU/ GALILEO receivers
- Real-time GPS/GLONASS/BEIDOU/GALILEO 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:

- GPS /GLONASS Re-Radiating in Labs / Retail Stores/ Factory Line

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

MODEL: RK-20W Series

Rev.A

I. Specifications:

(A)RK-20

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 \pm 5	1227 \pm 5	1561 \pm 5	1575.42 \pm 1.023	1602 \pm 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 \pm 3				
Output Impedance (Ω)	50				

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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)		
Environmental Conditions			
Operation Temperature (°C)	-40 ~ +85		
Storage Temperature (°C)	-40 ~ +85		
Relative Humidity	95% non-condensing		

(B) TL-125

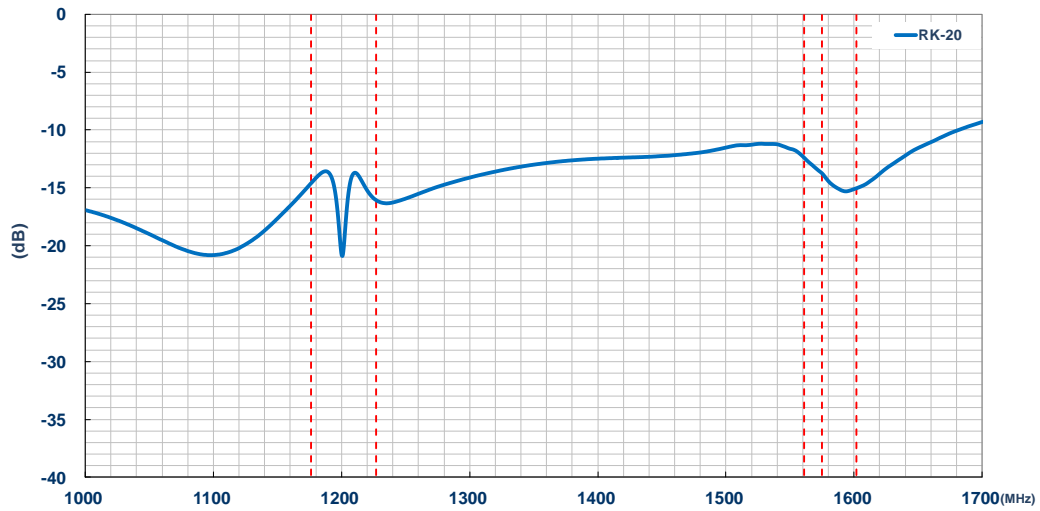
Items	Specifications				
Active Antenna Performance					
Application Bands	BeiDou L1	GPS L1	GLONASS L1	GPS L2	GPS L5
Frequencies (MHz)	1561 ±2.046	1575.42 ±1.023	1602 ±5	1227 ±11	1176.45 ±12
Gain (dB)	43.50	45	45	43	45.49
Noise (dB)	5.27	4.05	4.48	2.4	1.91
Current Consumption (mA)	23 ±5				
Polarization	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					
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					

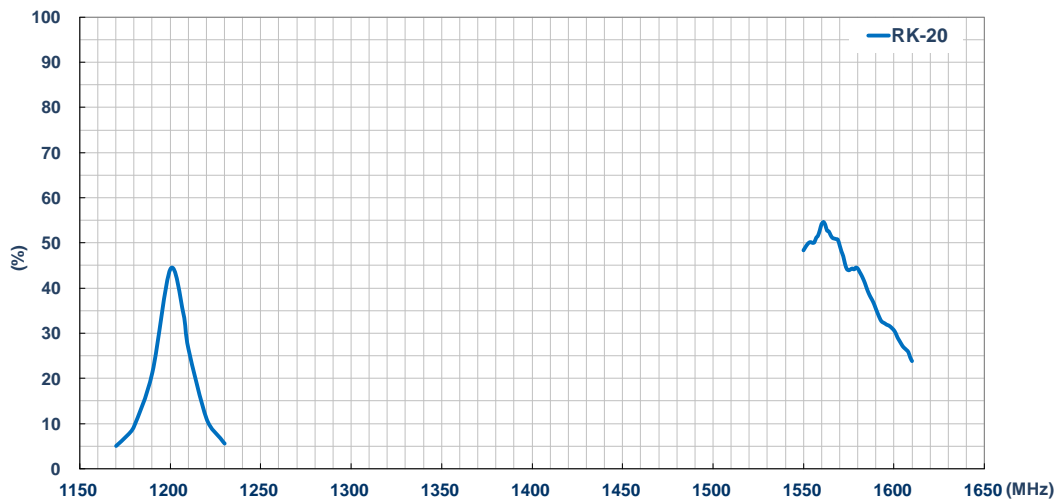
II. Electrical Properties:

(A)RK-20

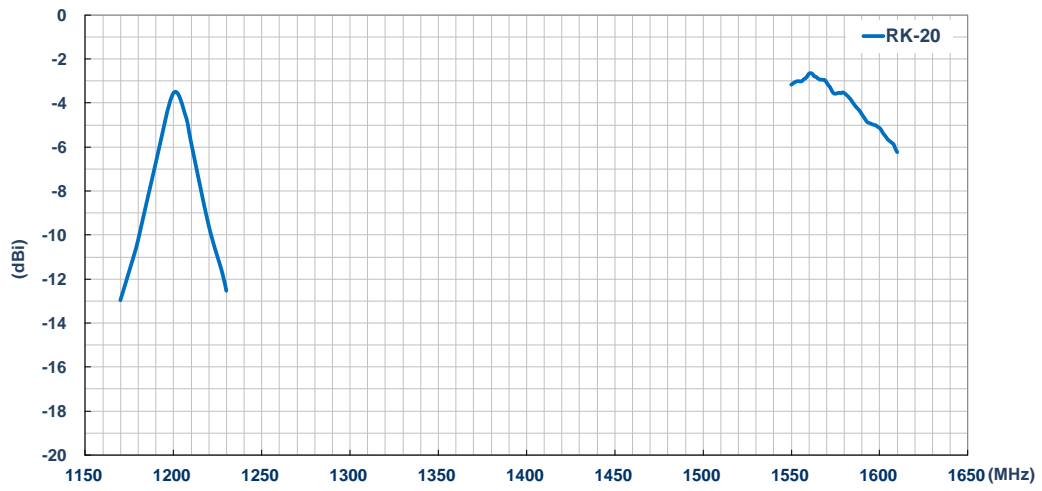
S11 (dB)



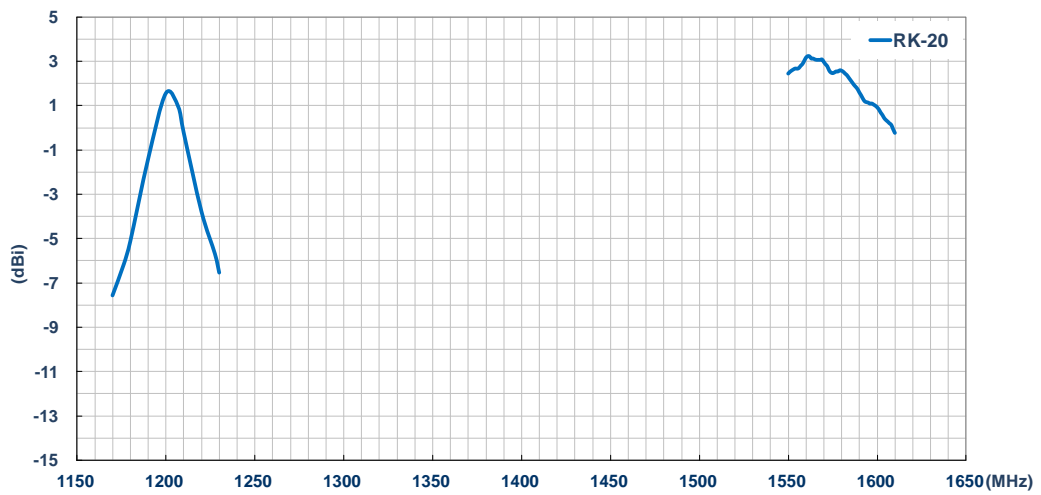
Efficiency (%)



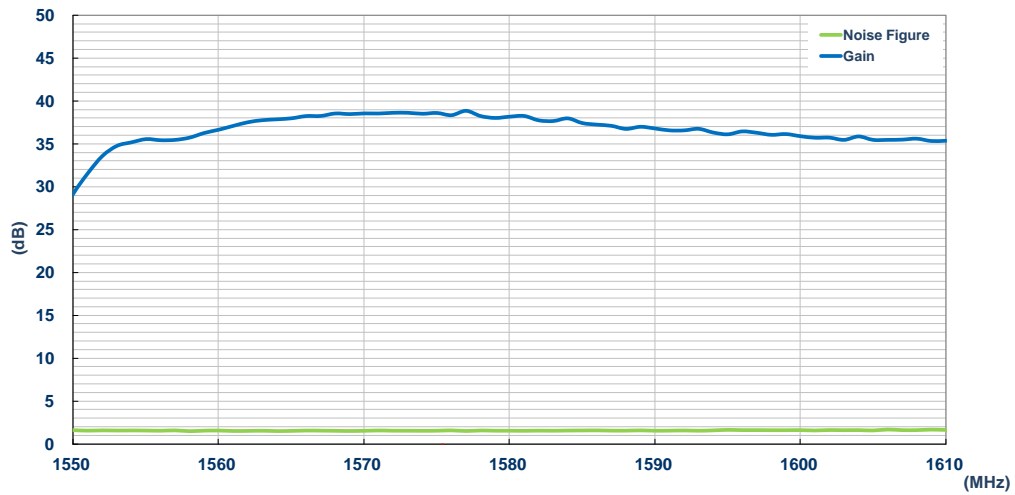
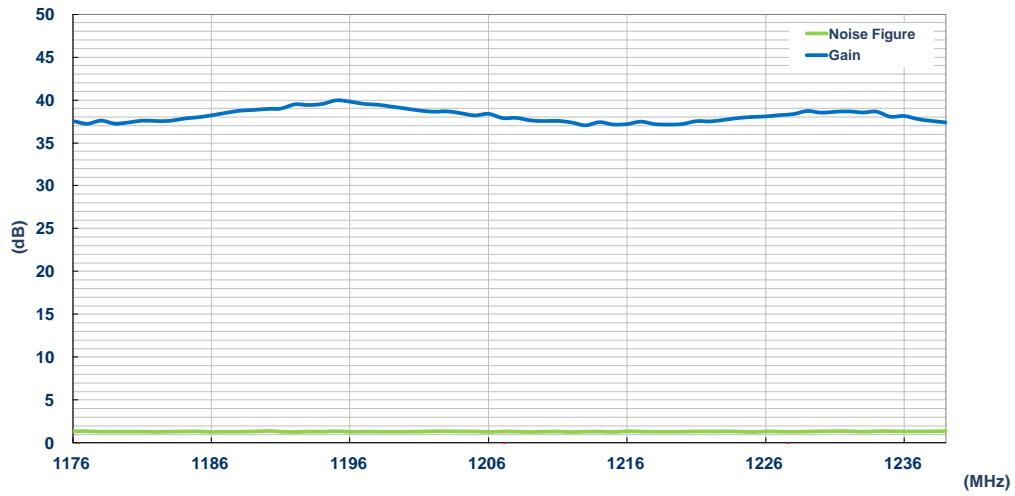
Average Gain (dBi)



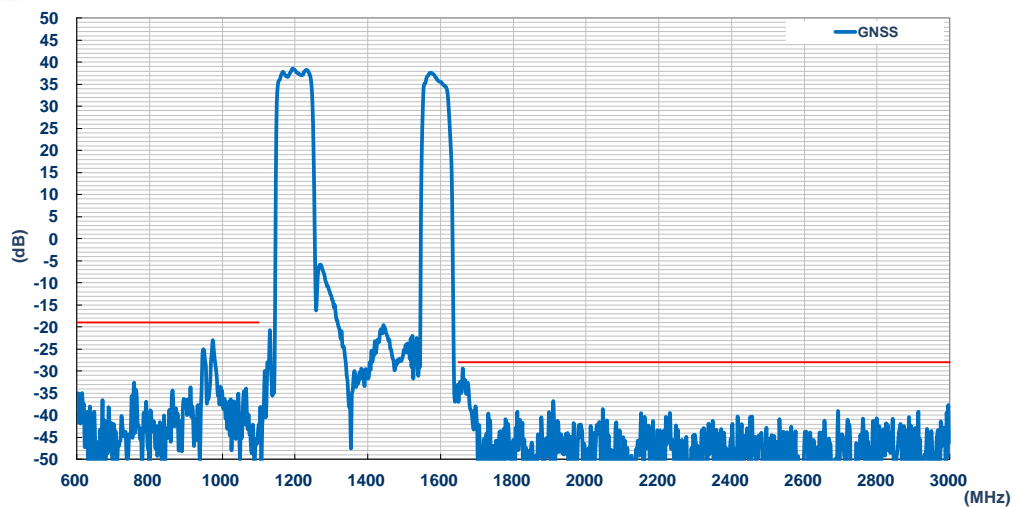
Peak Gain (dBi)



Noise Figure & Gain (dB)



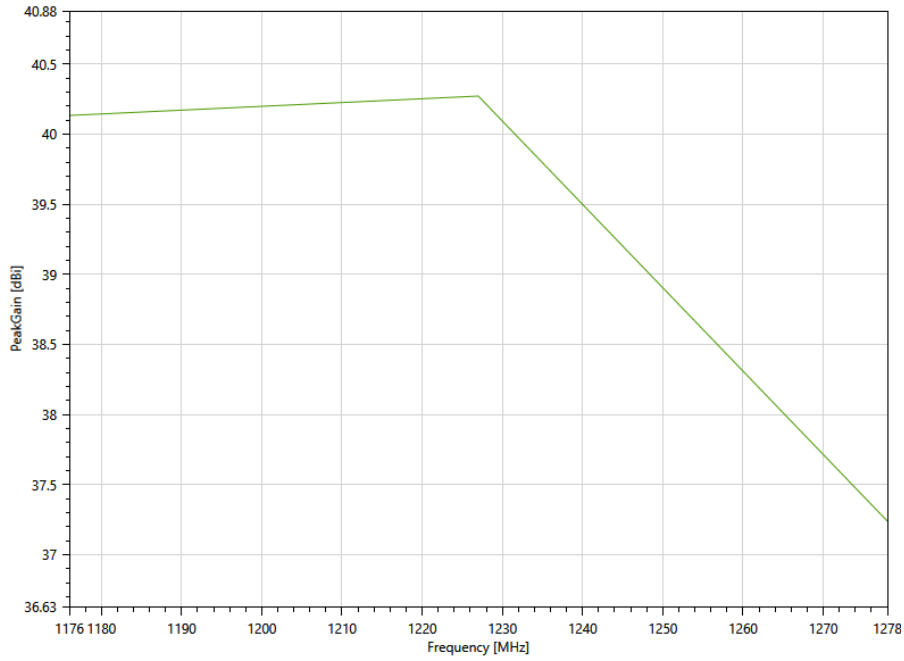
Out of Band Rejection (dB)



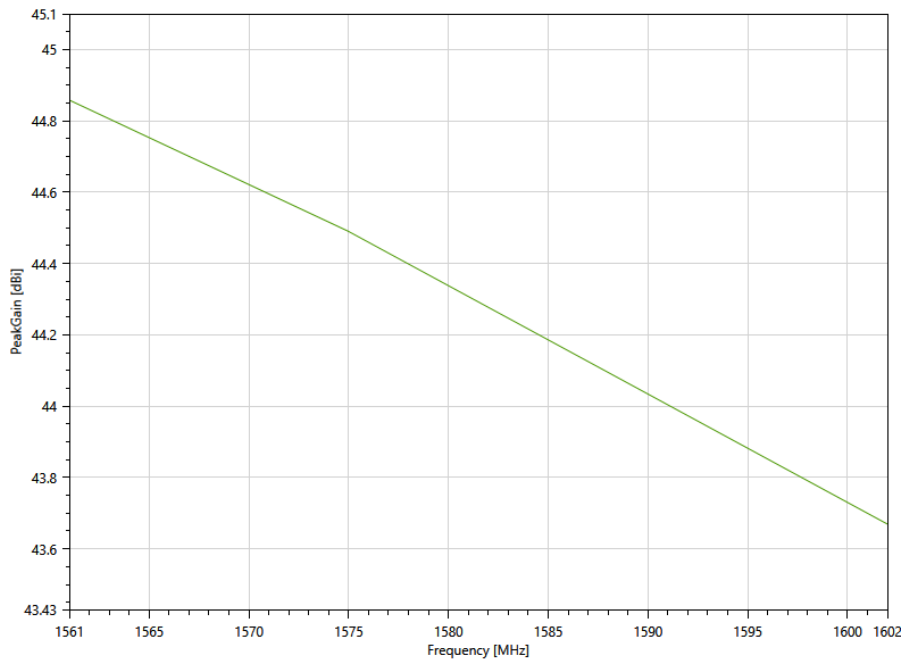
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(B)TL-125

1164 MHz ~ 1283 MHz Peak Gain

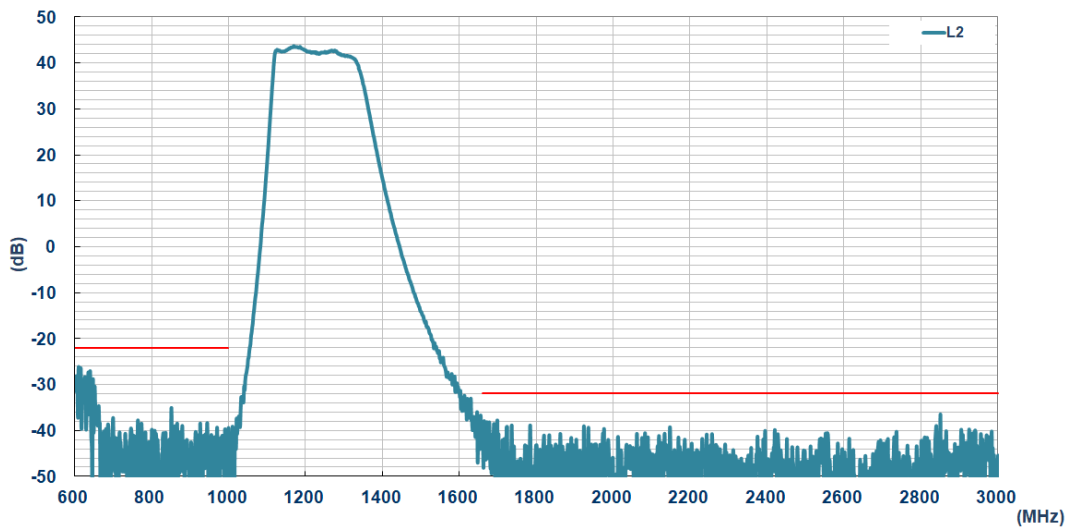
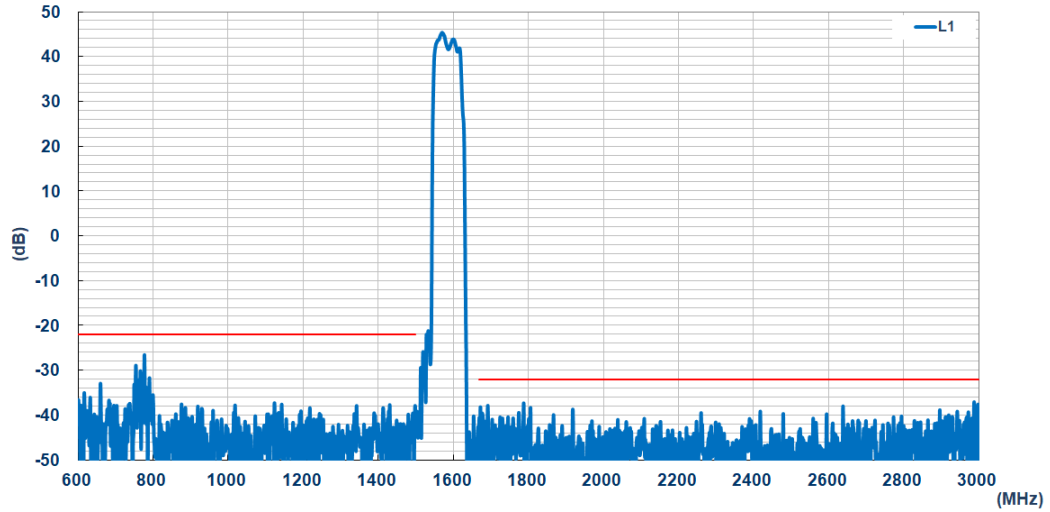


1559 MHz ~ 1610 MHz Peak Gain

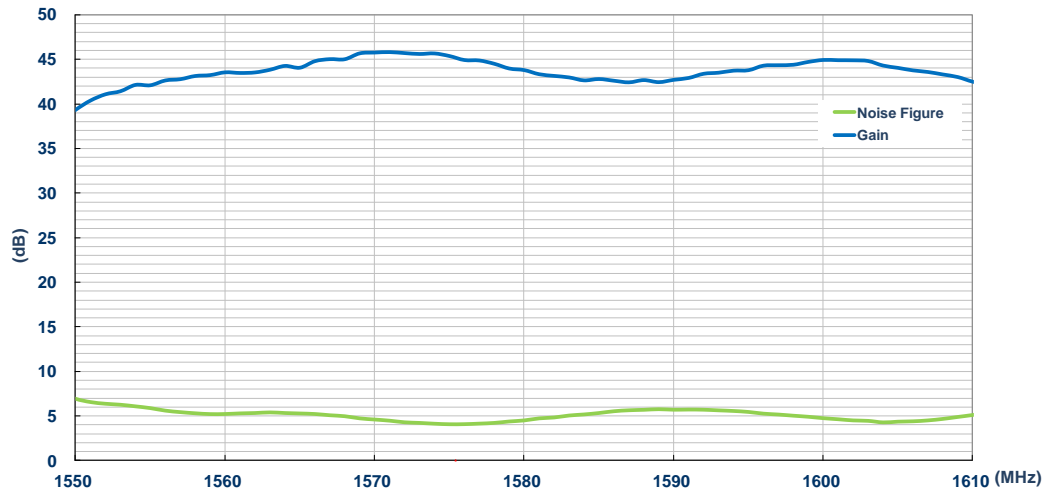
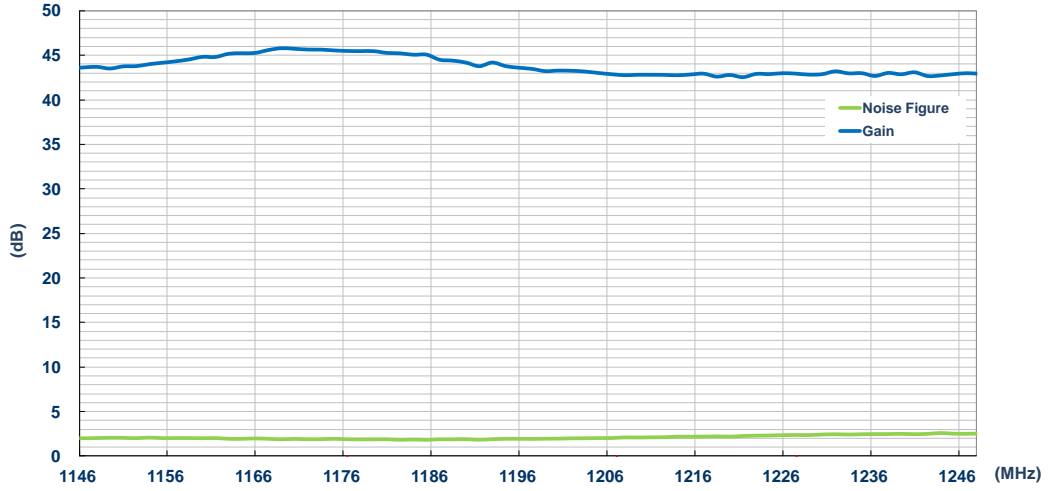


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Out of Band Rejection (dB)



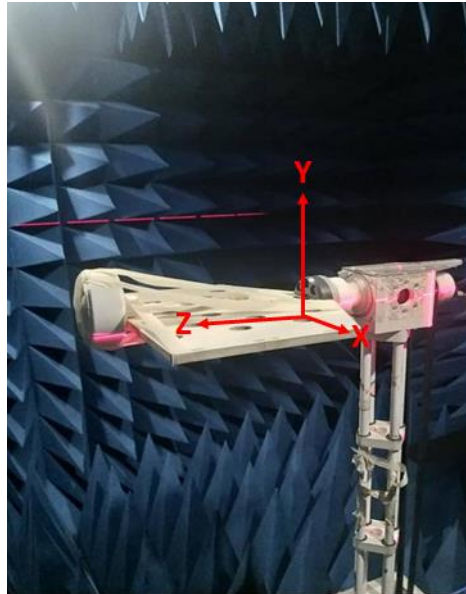
Noise Figure & Gain (dB)



III. Antenna Radiation Pattern Measurement:

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

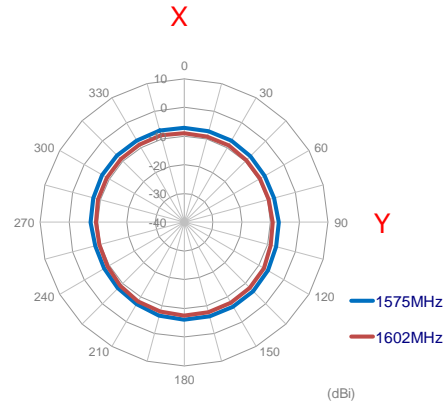
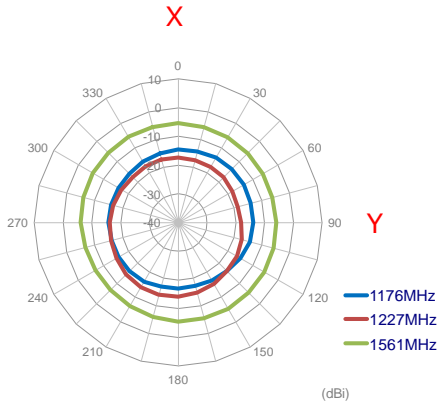
RK-20



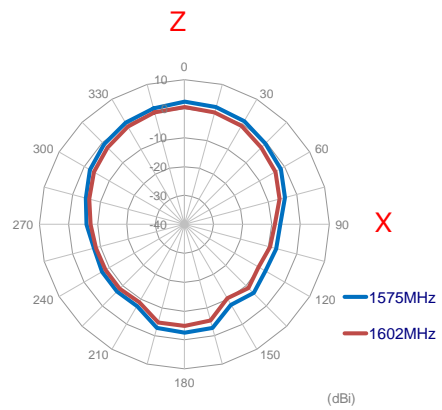
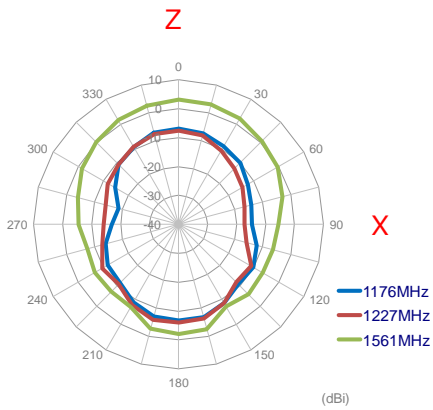
A) 2D Radiation Pattern:

RK-20

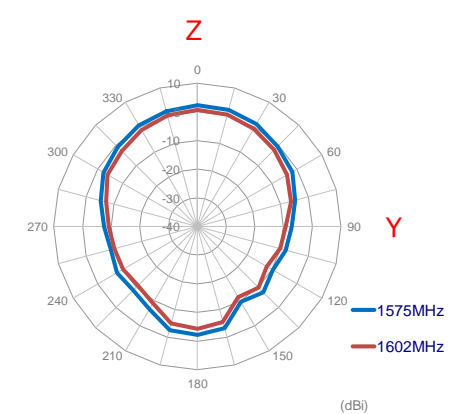
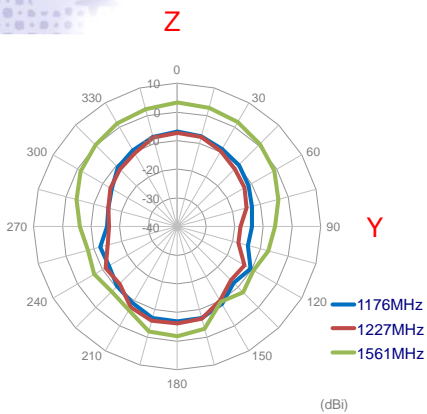
X-Y Plane



X-Z Plane



Y-Z Plane

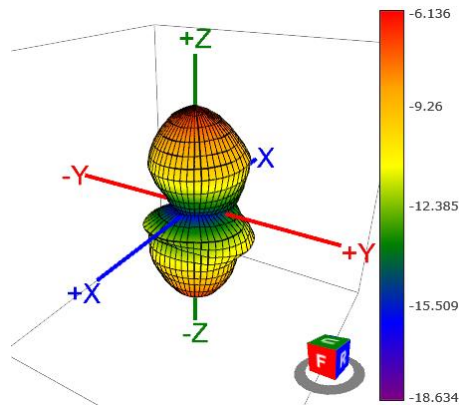


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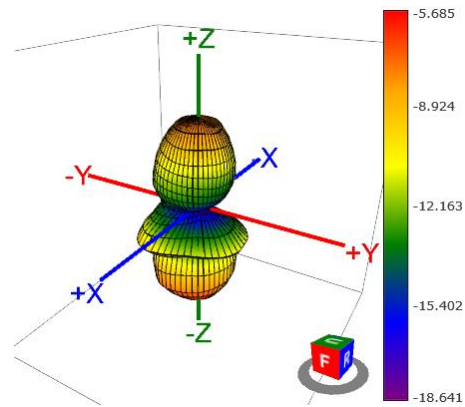
B) 3D Radiation Pattern:

RK-20

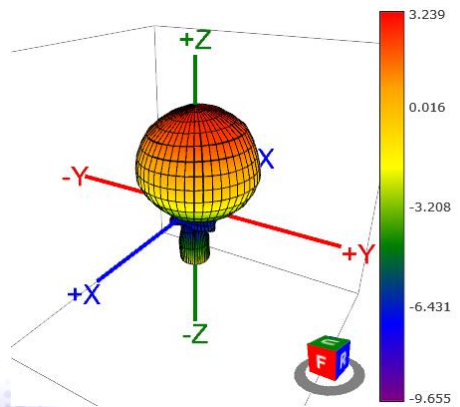
1176MHz



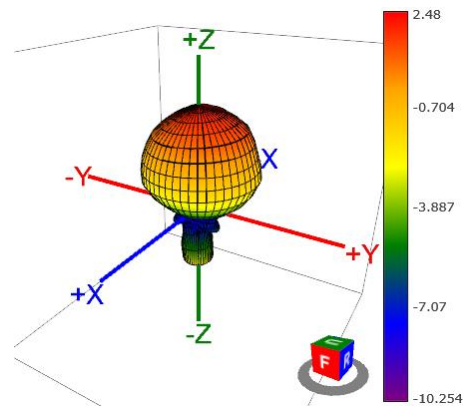
1227MHz



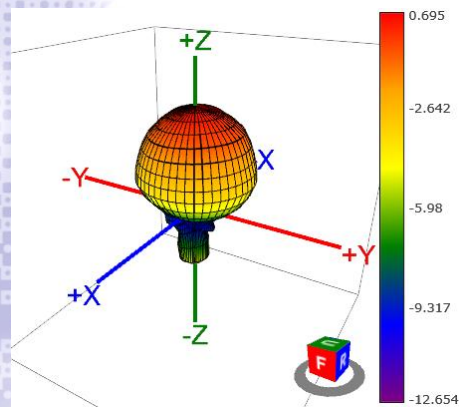
1561MHz



1575.42MHz



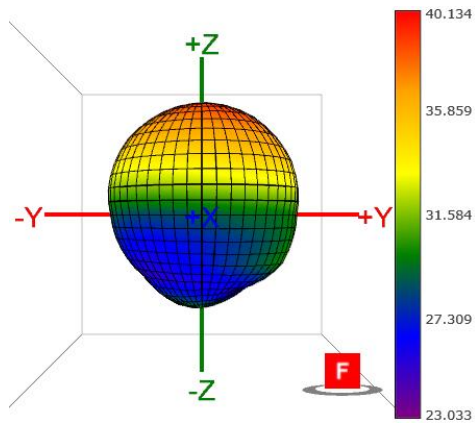
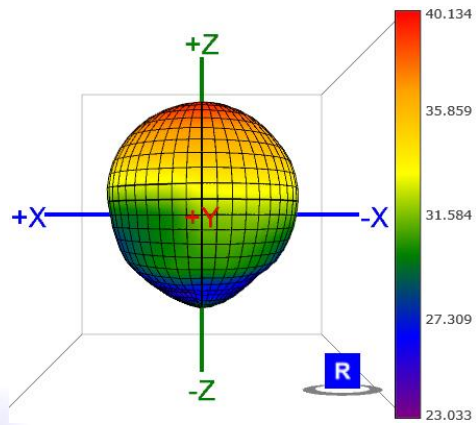
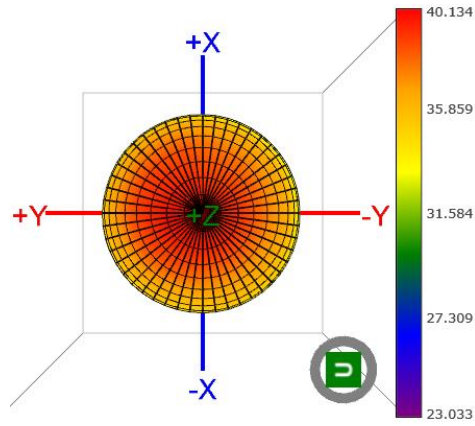
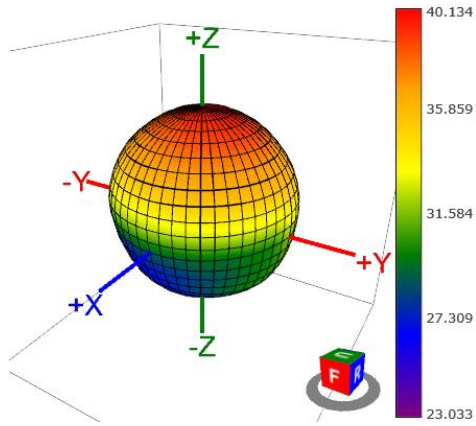
1602MHz



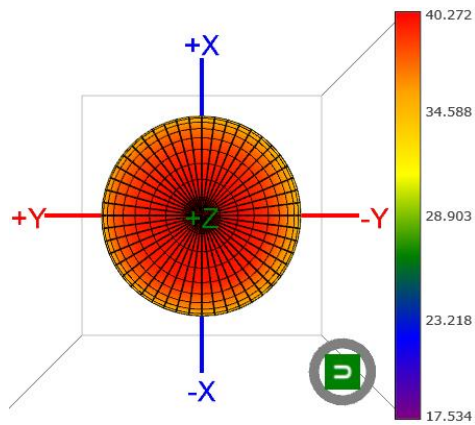
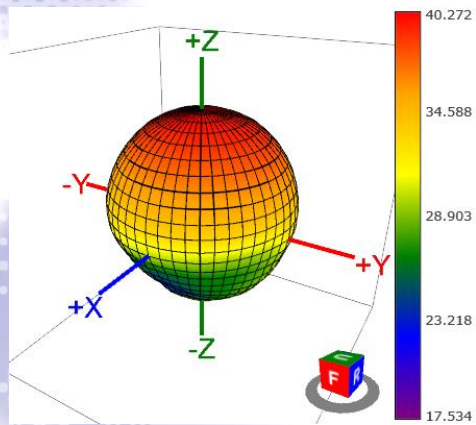
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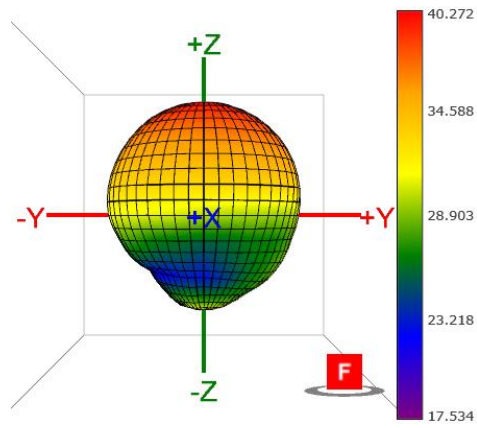
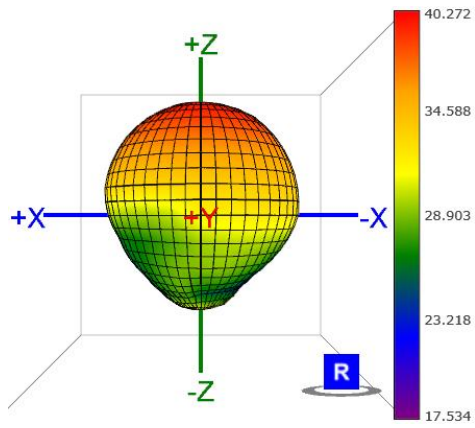
1176MHz



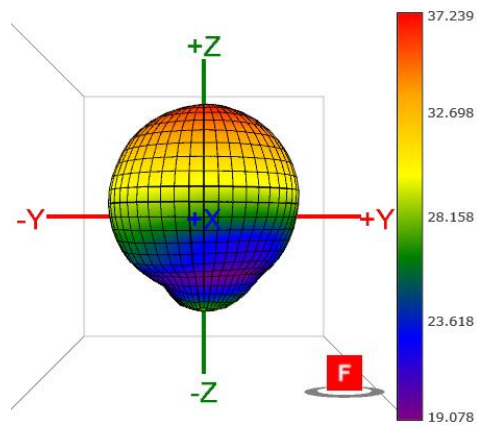
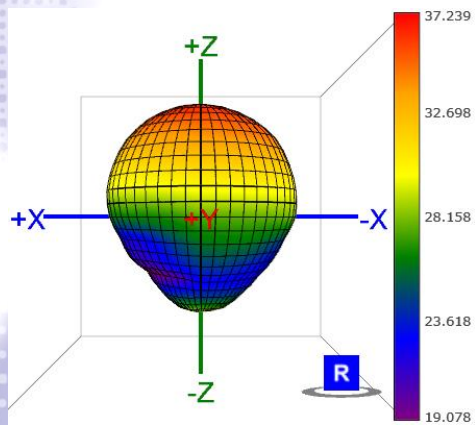
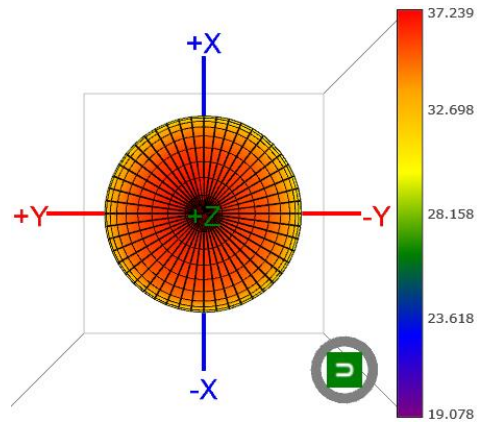
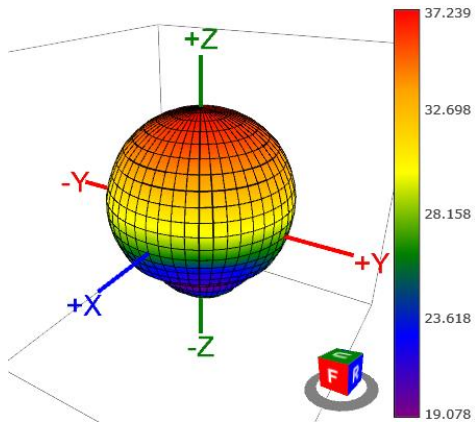
1227MHz



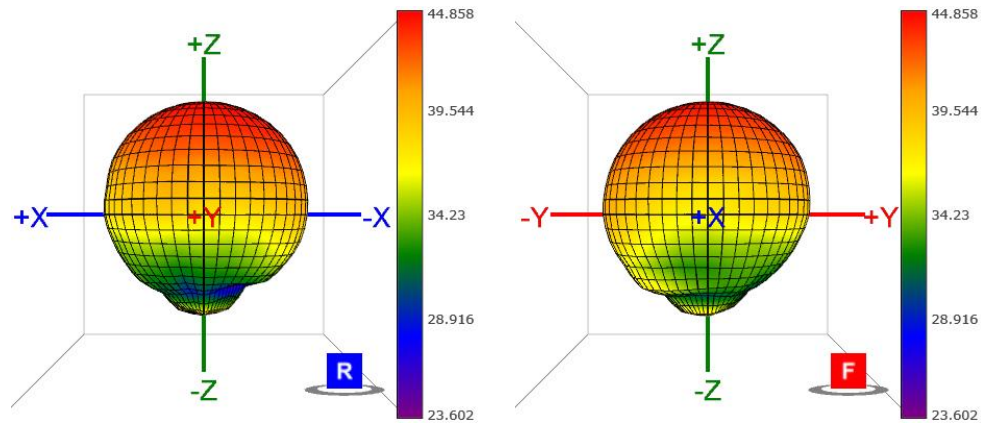
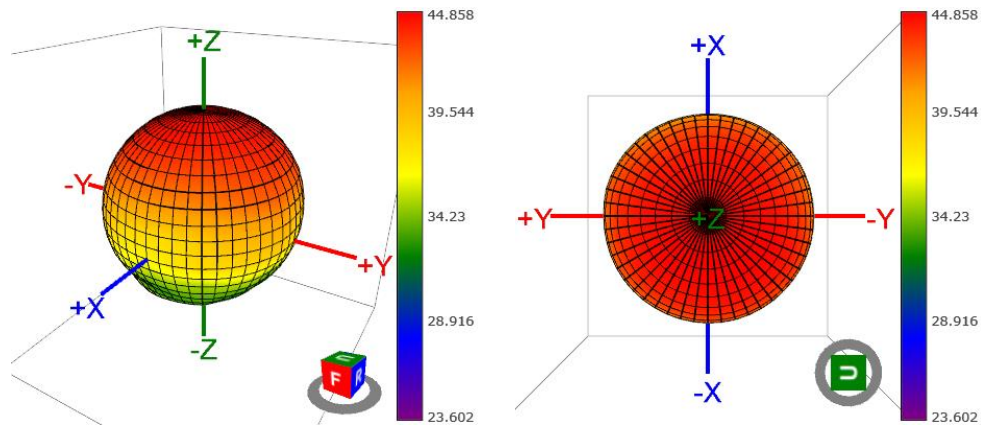
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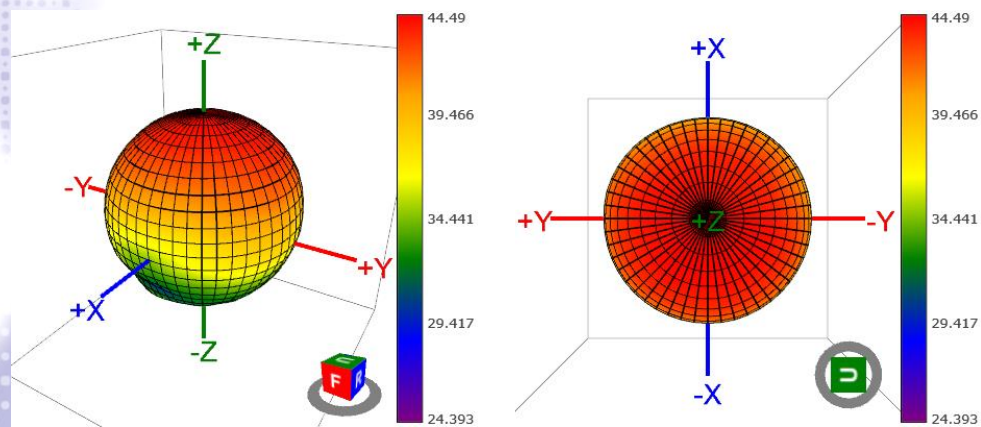
1278MHz



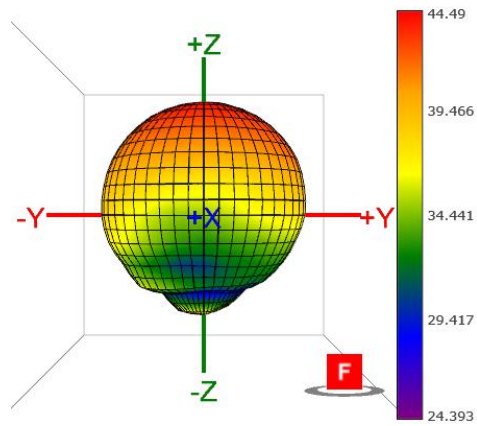
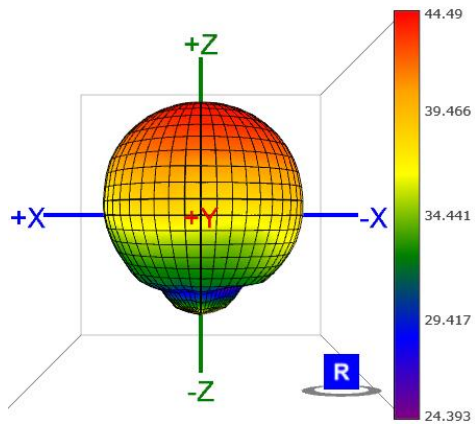
1561MHz



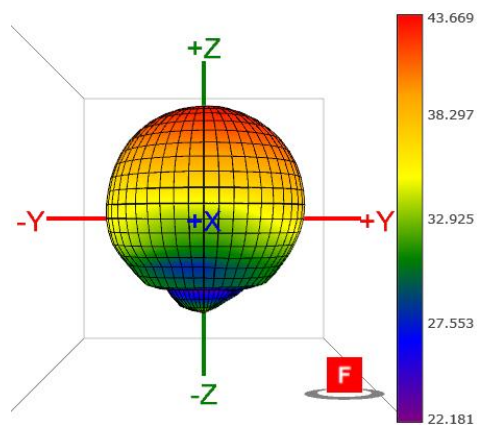
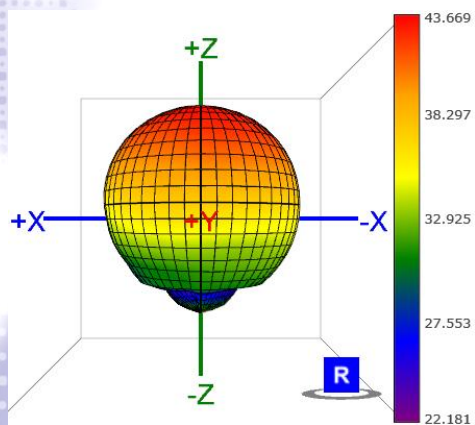
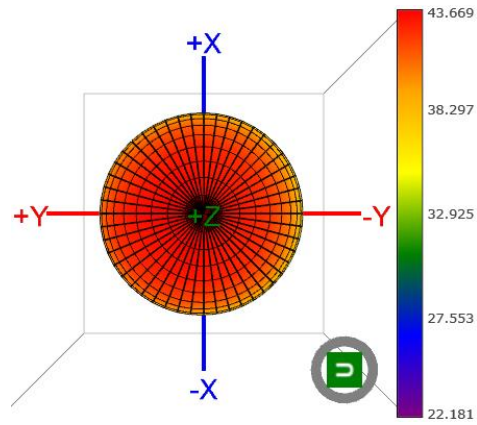
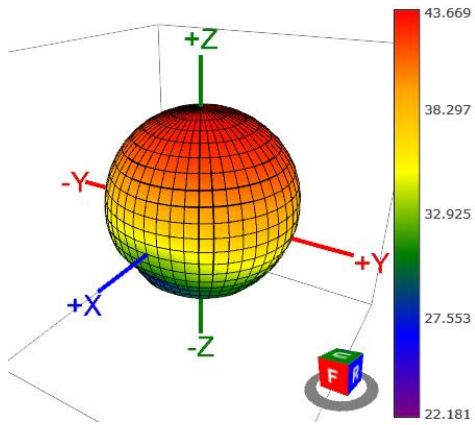
1575MHz



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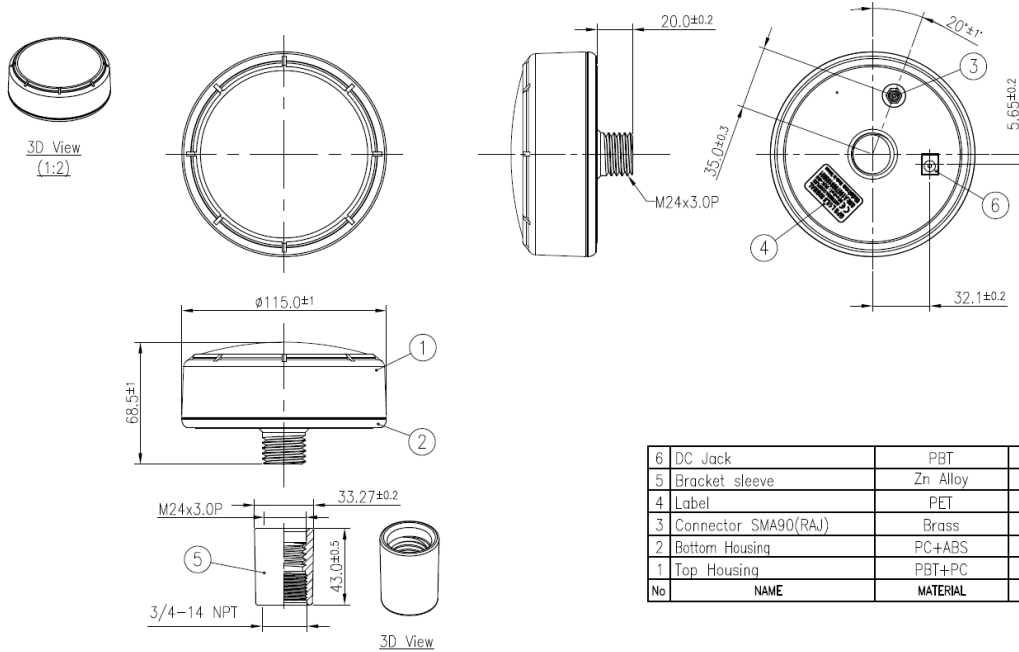


1602MHz



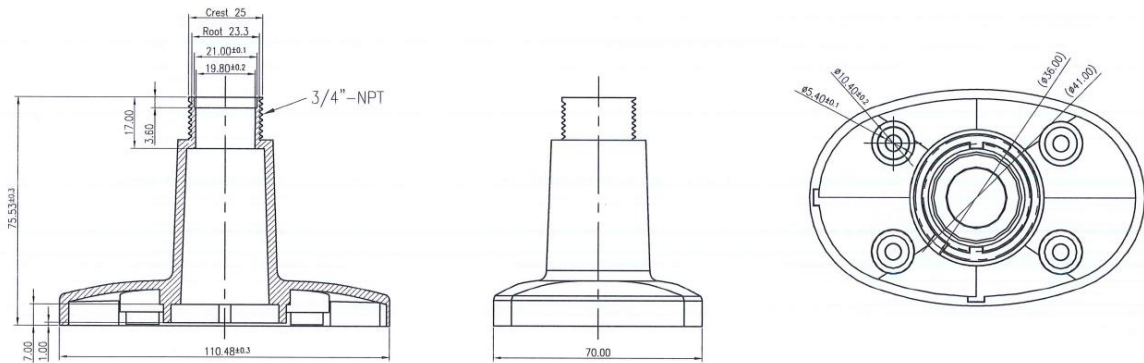
IV. Mechanical Drawing (Unit:mm):

RK-20

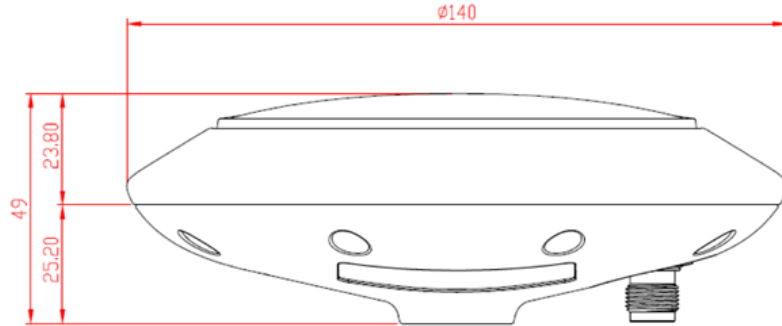


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RK-20 Bracket

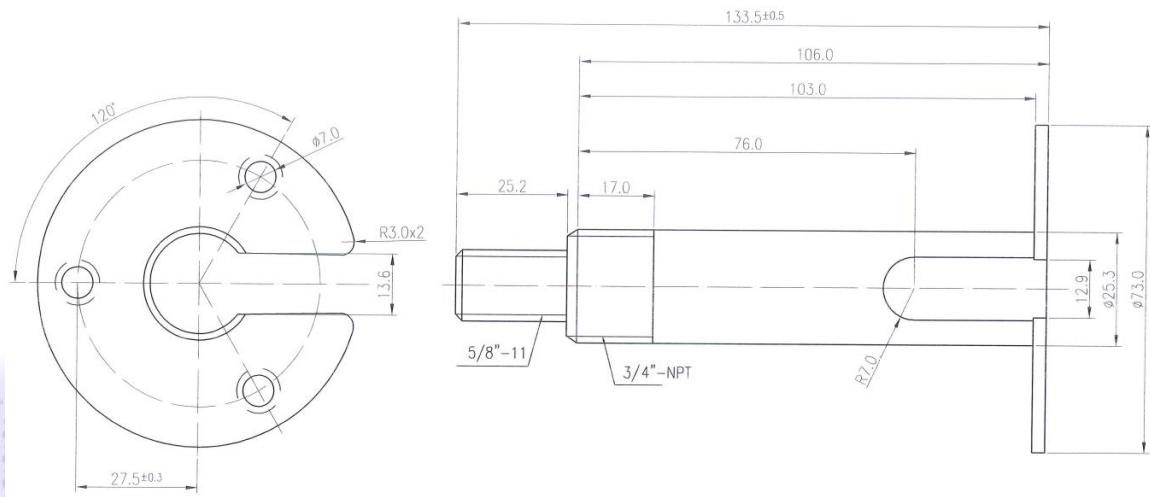


TL-125

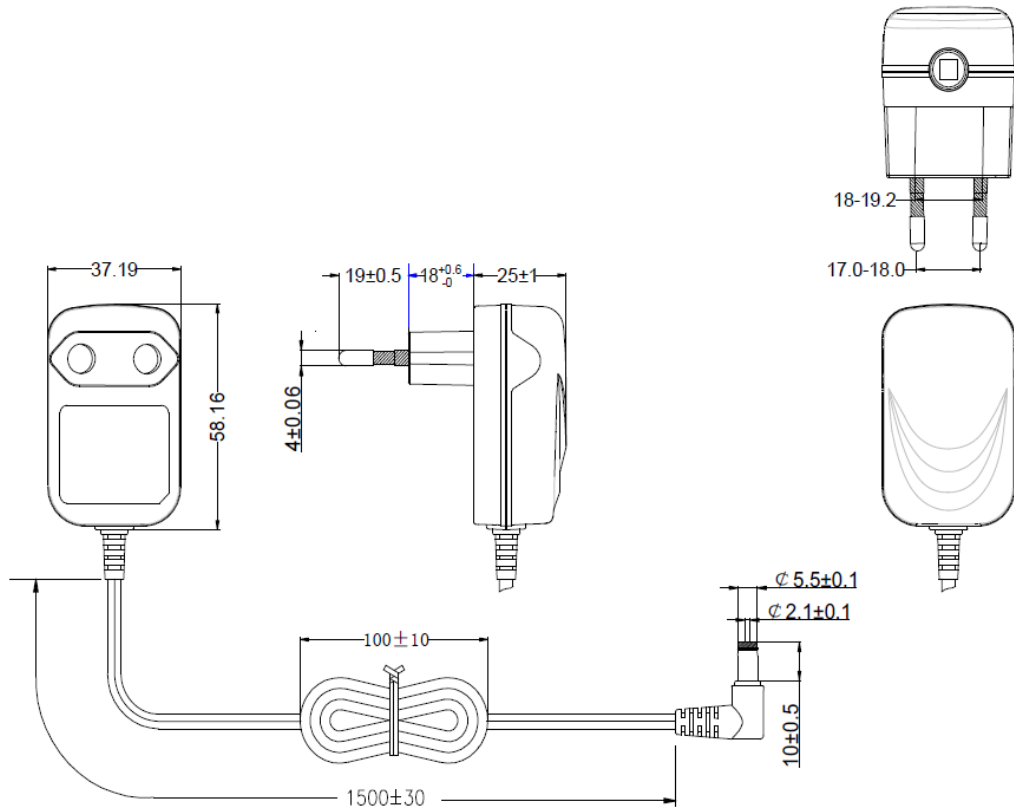


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TL-125 Steel tube seat



Regulator



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V. Package Include

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

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	<p>Re-radiator x 1</p> <ul style="list-style-type: none"> ● 115mm (dia.) x 68.5mm (H)
	<p>Bracket x 1</p> <ul style="list-style-type: none"> ● 110.48mm (dia.) x 75.53mm (H) ● PC+PBT / anti-UV
	<p>Regulator x 1</p> <ul style="list-style-type: none"> ● 58.16mm (L) x 37.19mm (W) x 25mm (H) ● Country dependent plug types

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