

Antenna (EG-42W)



Indoor-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 ~ 5.0				
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)		
Connector	SMA90 (RAJ)		
Environmental Conditions			
Operation Temperature (°C)	-40 ~ +85		
Storage Temperature (°C)	-40 ~ +85		
Relative Humidity	95% non-condensing		

(B) EG-42W

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 (%)	9.55	40.80	61.72	70.00	44.55
Average Gain (dBi)	-10.20	-3.89	-2.10	-1.55	-3.51
Peak Gain (dBi)	-2.77	4.14	4.58	5.17	3.42
Axial Ratio	4.61	3.26	0.87	0.73	1.95
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)	42	43	40	39	39					
Noise Figure (dB)	2.7	2.9	3.2	3.0	3.2					
Operation Voltage (V)	3.3 ~ 5.0									
Current Consumption (mA)	26 ± 3									
Output Impedance (Ω)	50									
Out of Band Rejection										
Application Bands	1176		1227		1561		1575.42		1602	
Frequencies (MHz)	500 ~ 1100	1270 ~ 1530	500 ~ 1100	1270 ~ 1530	1270 ~ 1530	1650 ~ 3000	1270 ~ 1530	1650 ~ 3000	1270 ~ 1530	1650 ~ 3000
Out of Band Rejection (dB)	67	47	68	48	45	68	44	67	44	67
ESD Protection										
Contact Discharge (KV)	± 8									
Air Discharge (KV)	± 15									
Physical Condition										
Dimension (mm)	φ138.4(D) x 50.0(H)									
Connector	TNC (SBJ)									
Weight (g)	331									

Environmental Conditions	
Operation Temperature	-40 ~ +85 °C
Storage Temperature	-40 ~ +85 °C
Waterproof	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

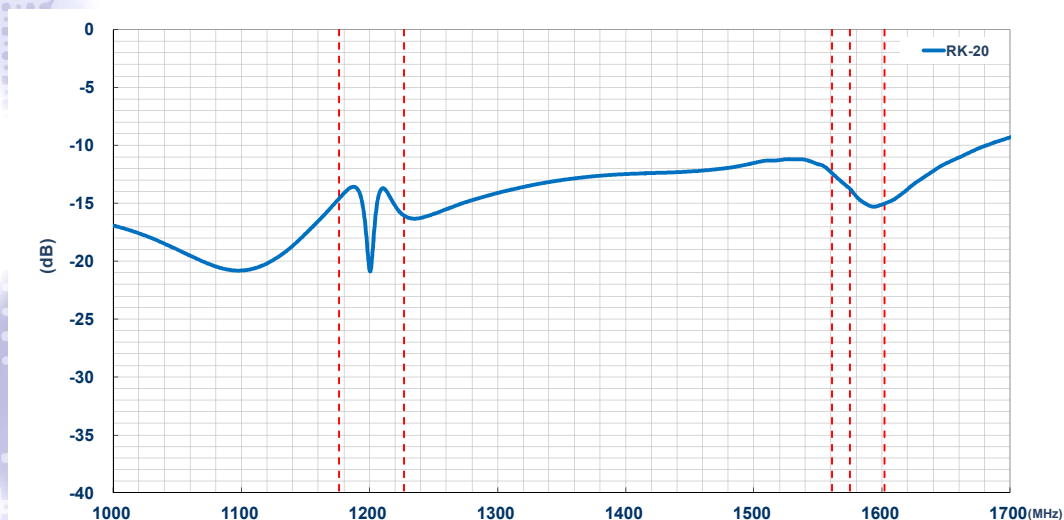
(C) EW-01

Items	Specifications				
Active Antenna Performance					
Application band	L5	L2	BeiDou	GPS	GLONASS
Frequency (MHz)	1176.45	1227	1561 ± 2.046	1575.42 ± 1.023	1602 ± 5
Gain (dB)	19	22	24	23	21
Noise Figure (dB)	4.64	4.54	3.52	3.52	3.48
Current Consumption (mA)	3.08 ± 2				
Output Impedance (Ω)	50				

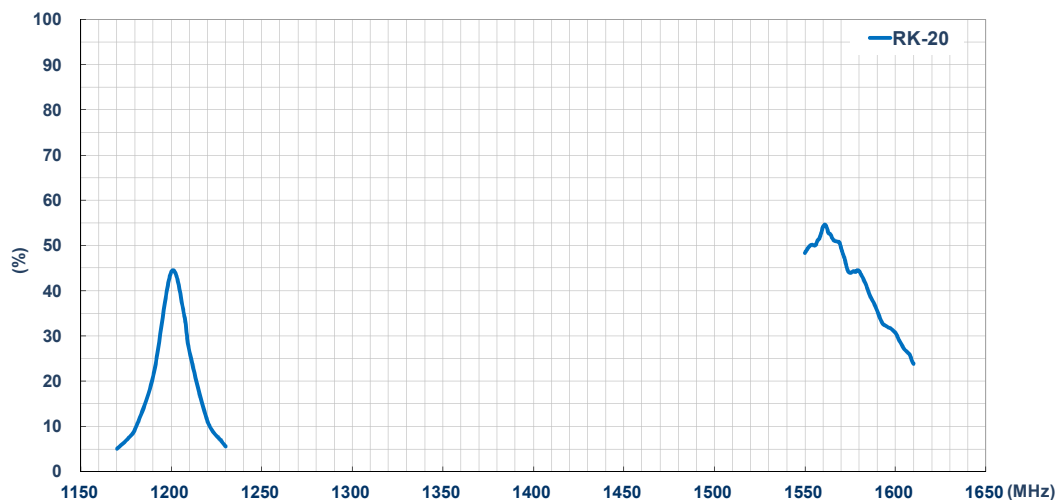
II. Electrical Properties:

(A)RK-20

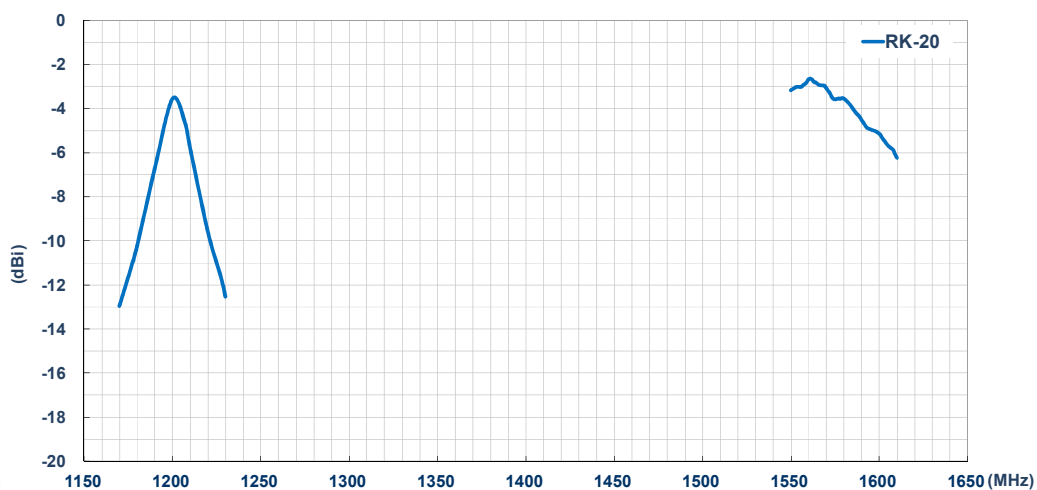
S11 (dB)



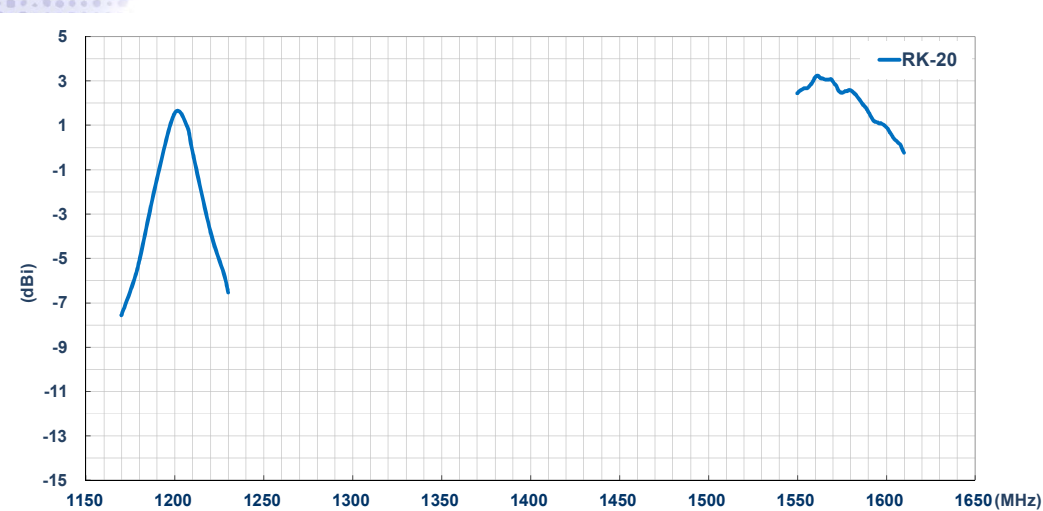
Efficiency (%)



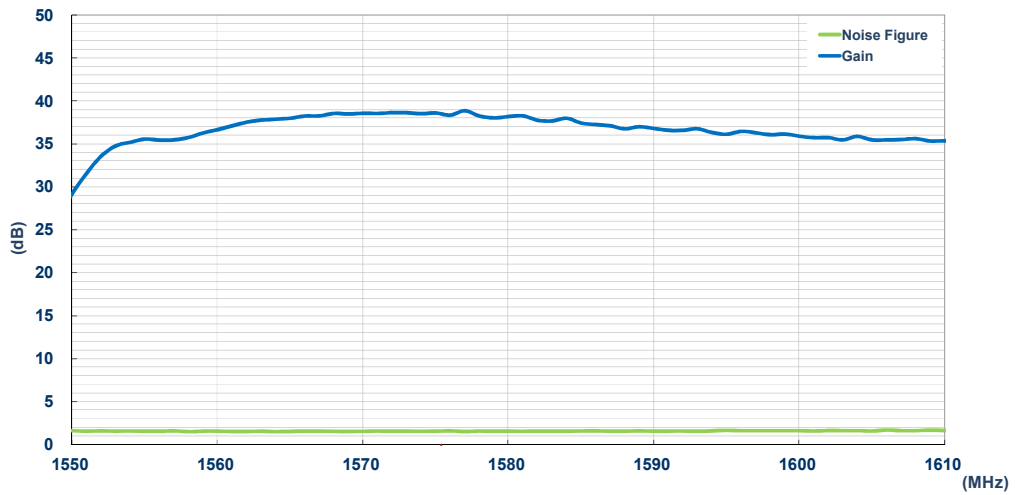
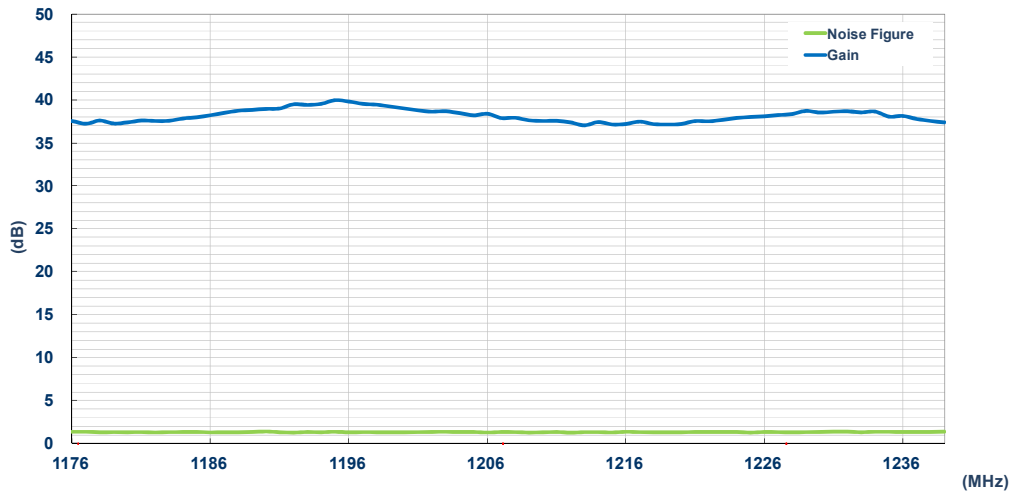
Average Gain (dBi)



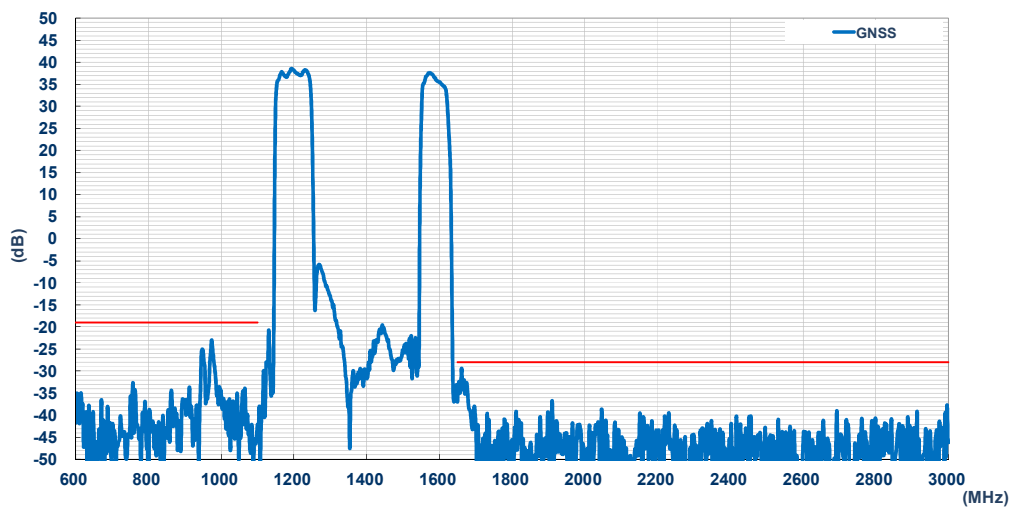
Peak Gain (dBi)



Noise Figure & Gain (dB)



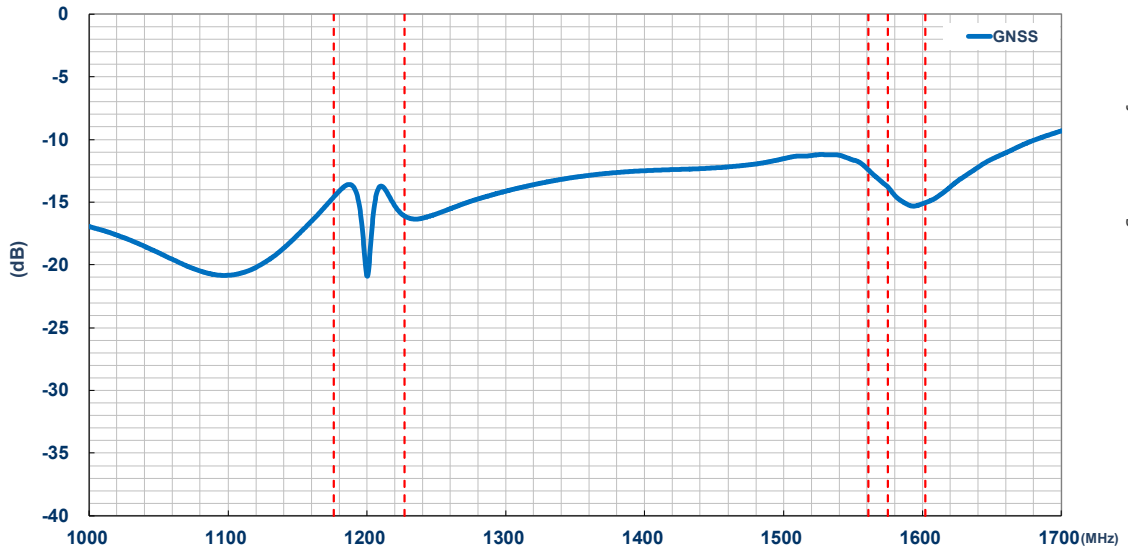
Out of Band Rejection (dB)



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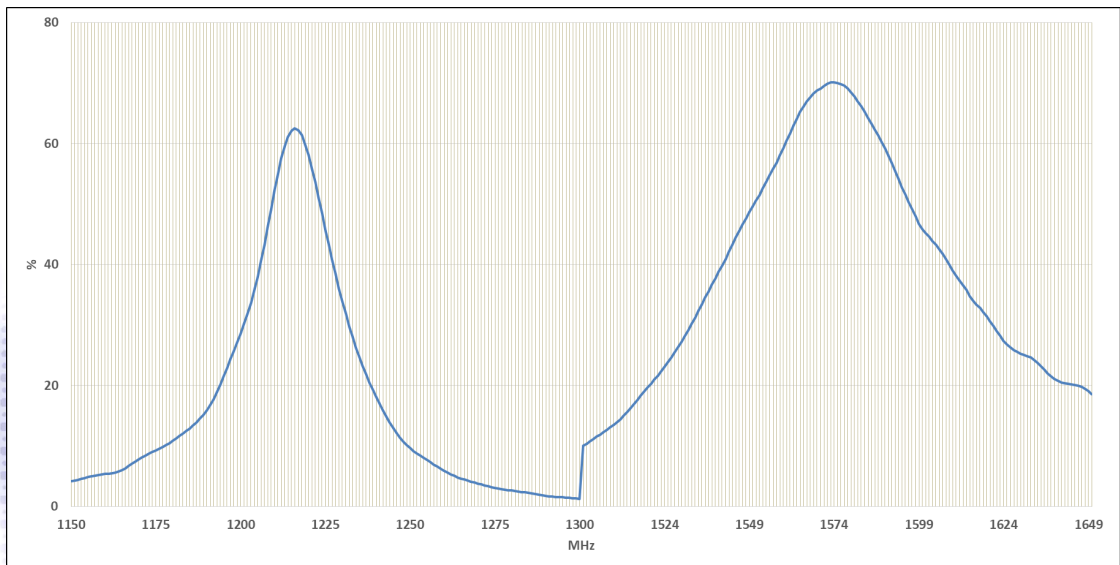
(B)EG-42W

S11 (dB)

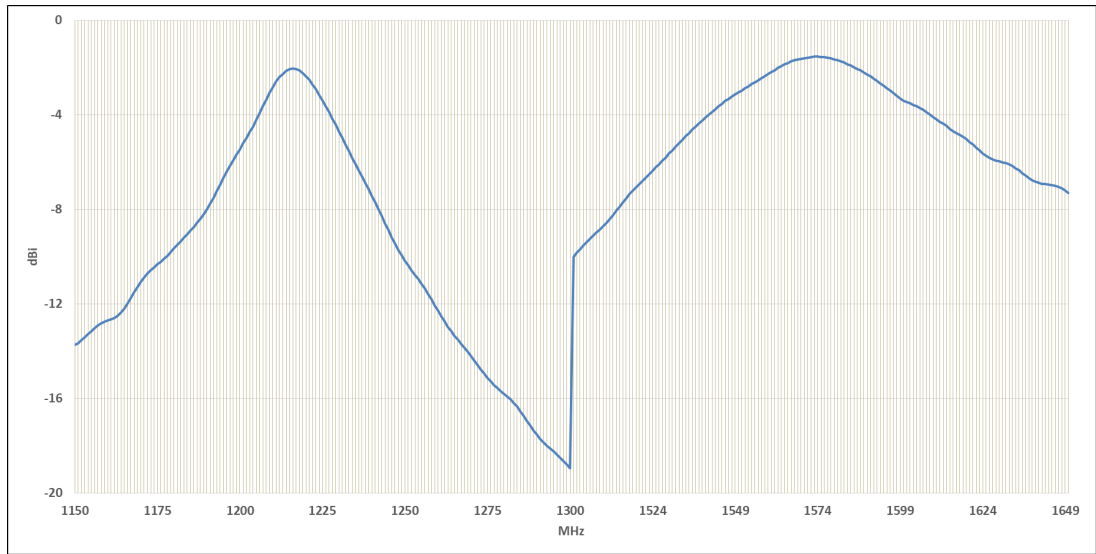


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Efficiency (%)

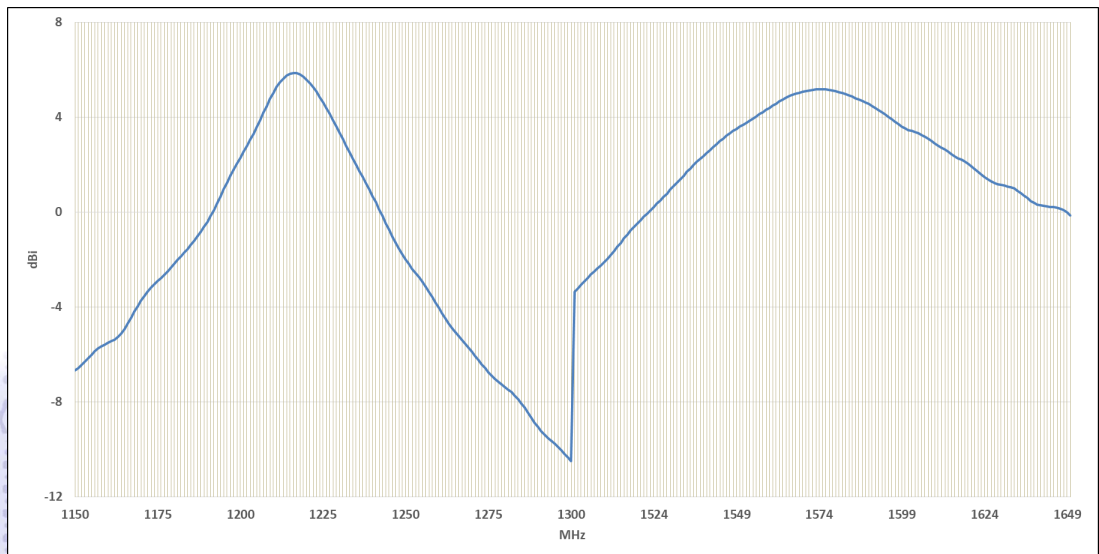


Average Gain (dBi)

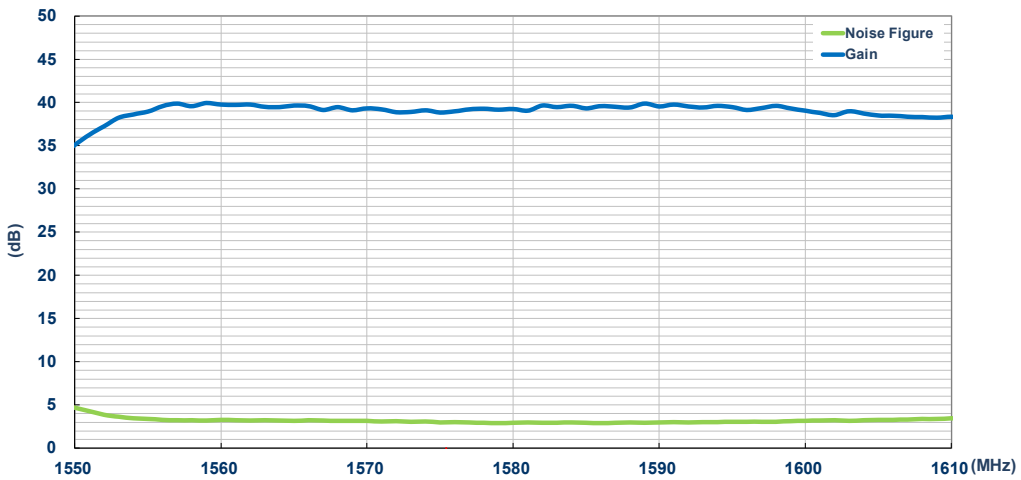
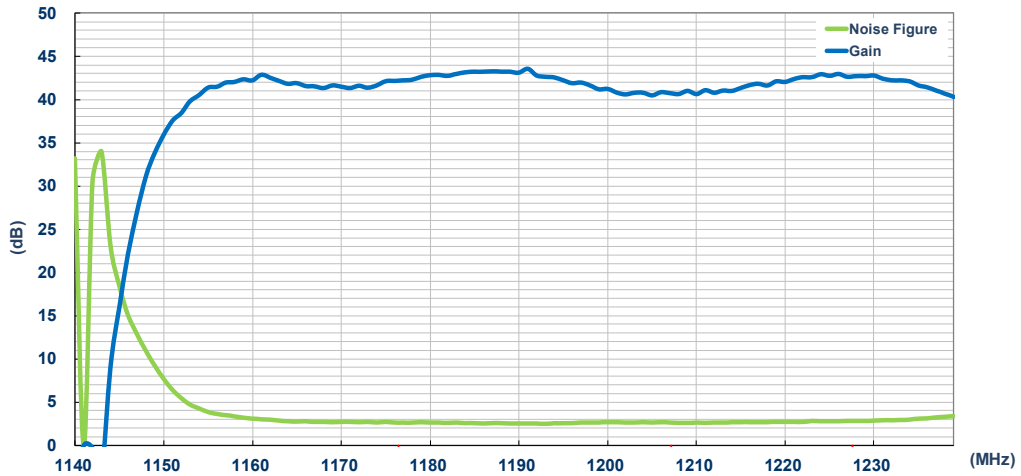


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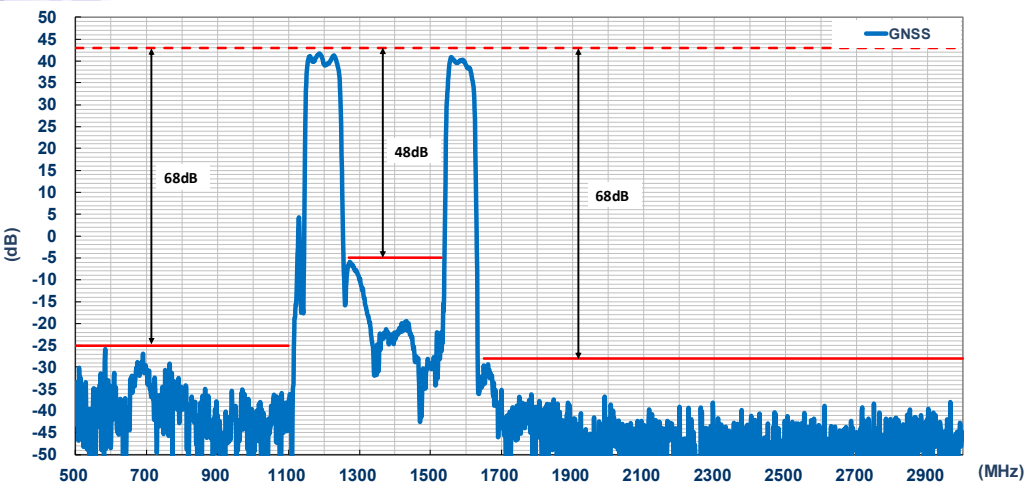
Peak Gain (dBi)



Noise Figure & Gain (dB)



Out of Band Rejection (dB)

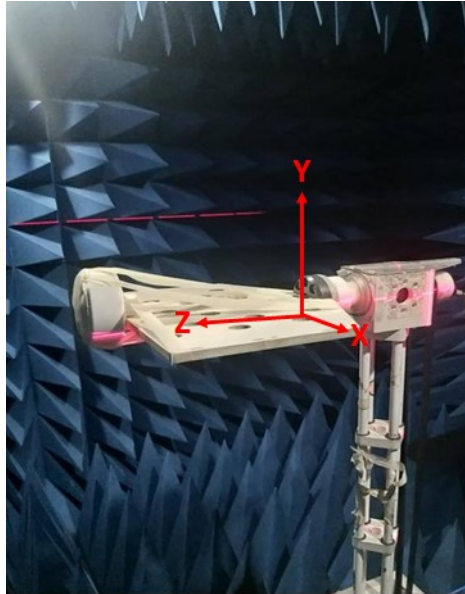


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III. Antenna Radiation Pattern Measurement:

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

RK-20

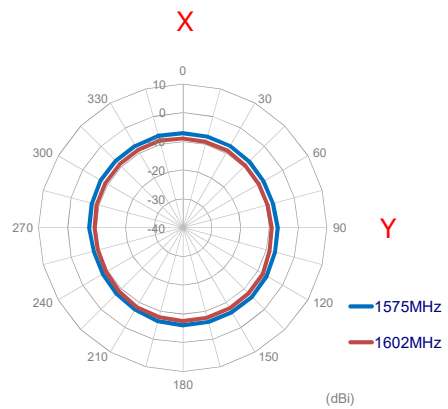
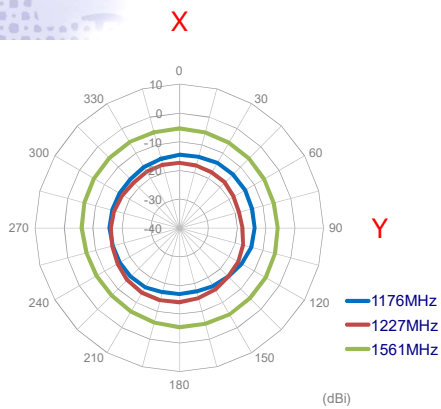


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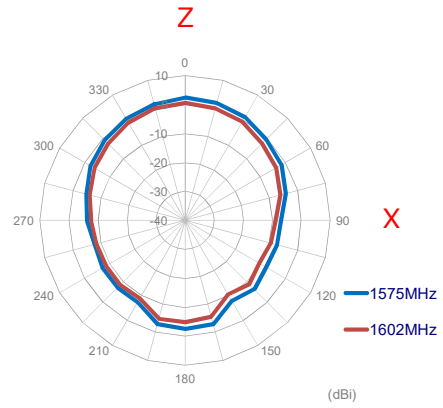
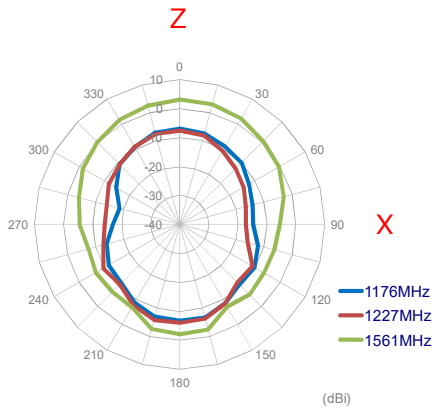
A) 2D Radiation Pattern:

RK-20

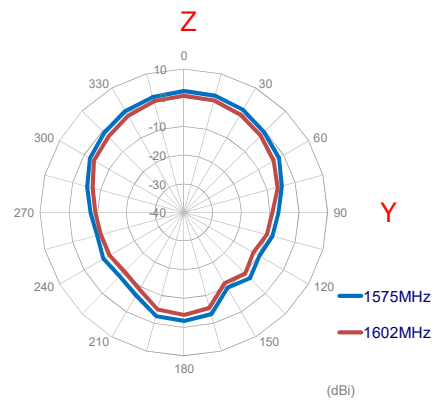
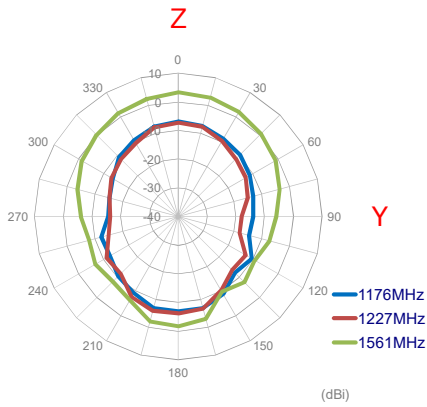
X-Y Plane



X-Z Plane



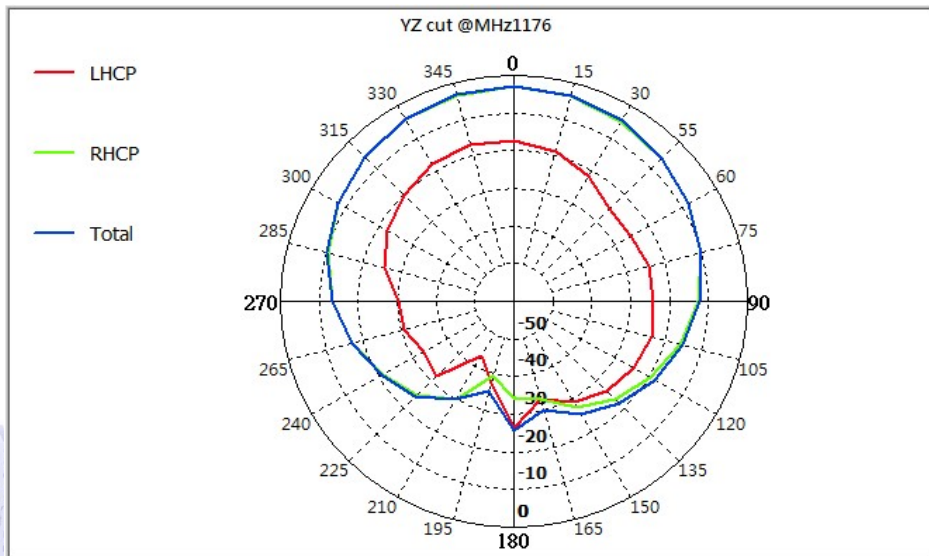
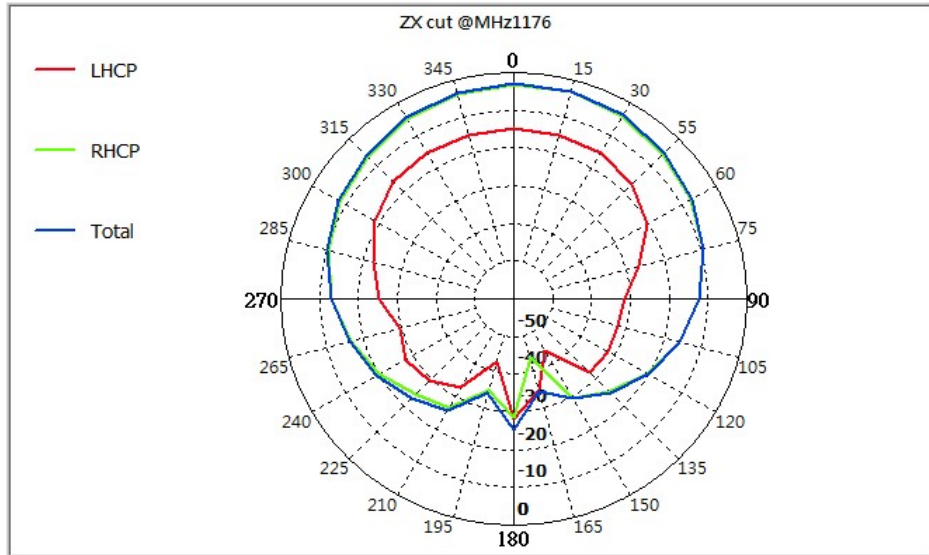
Y-Z Plane



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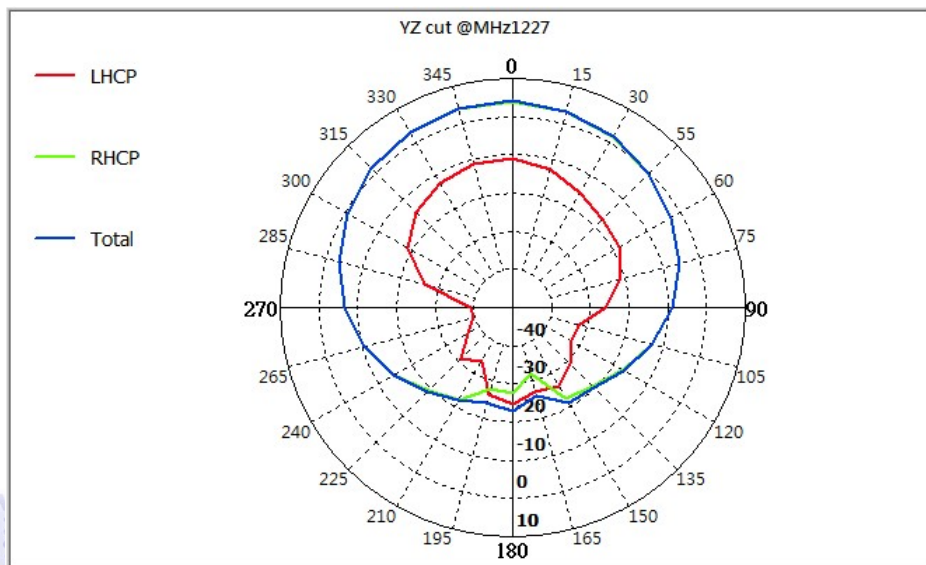
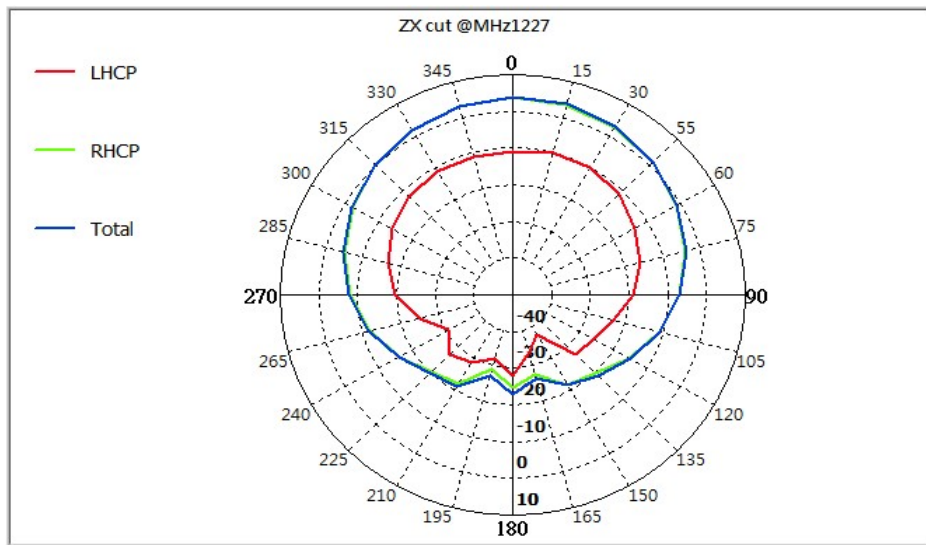
EG-42W

1176MHz



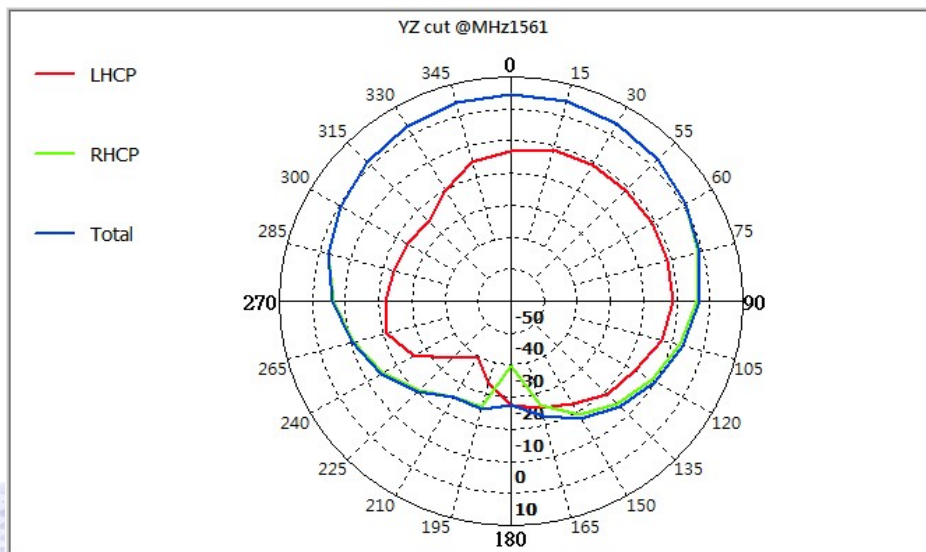
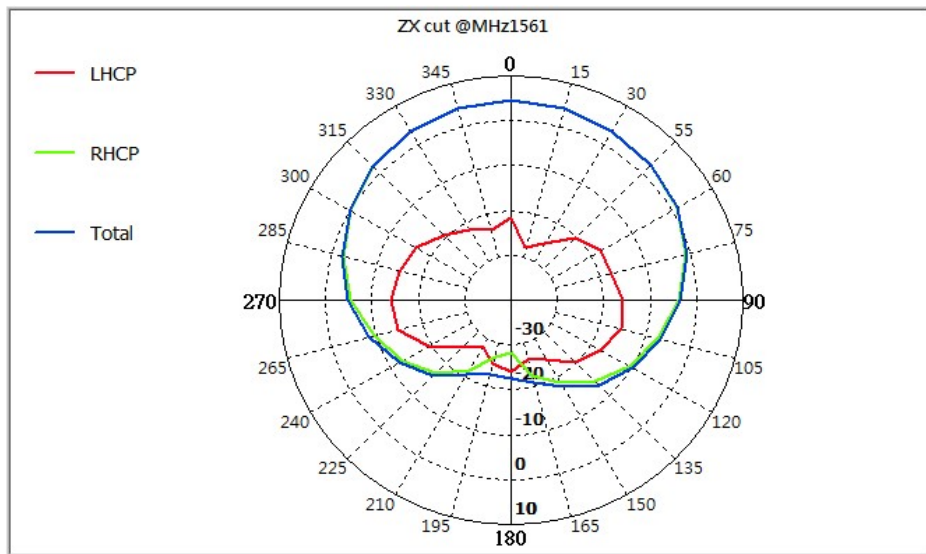
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1227MHz



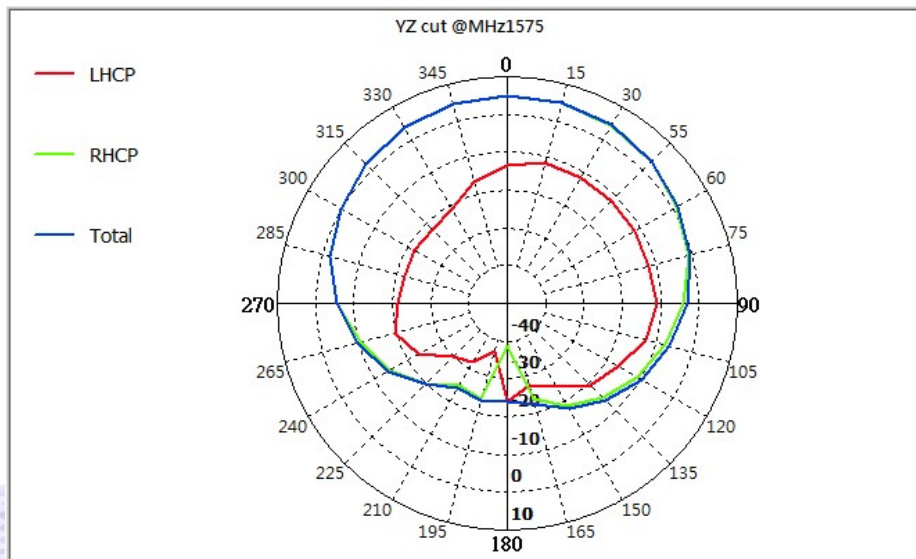
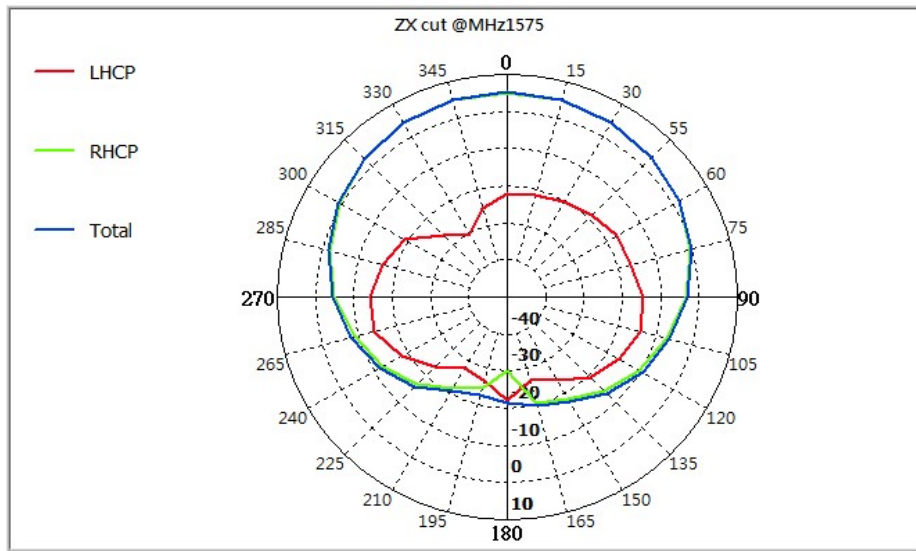
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1561MHz



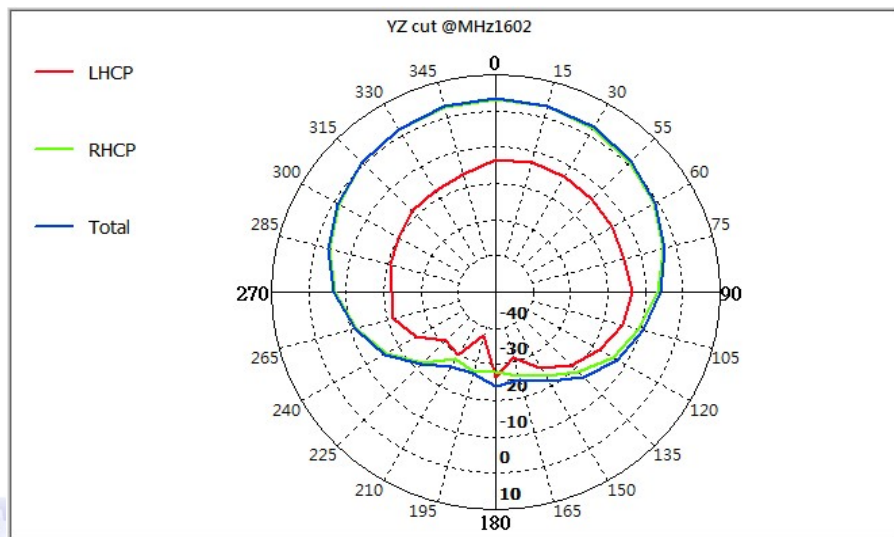
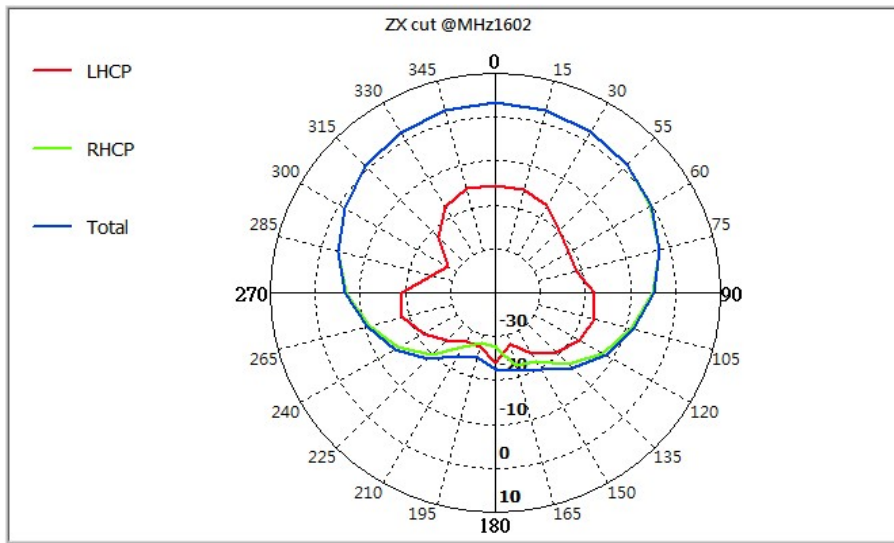
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1575MHz



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1602MHz

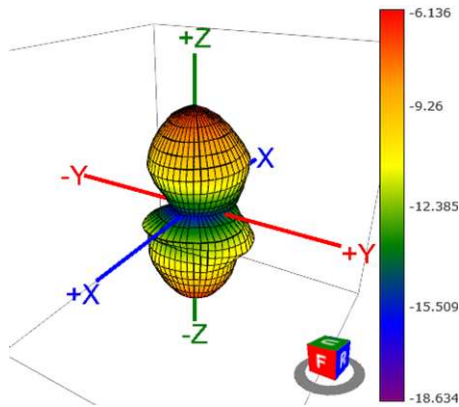


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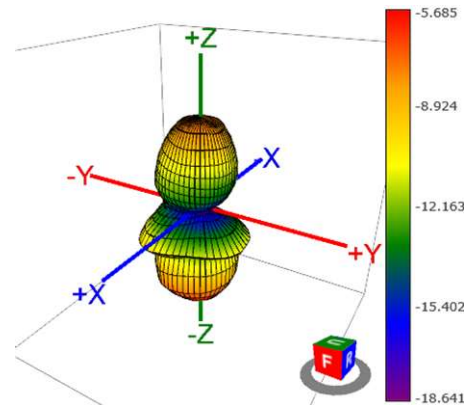
B) 3D Radiation Pattern:

RK-20

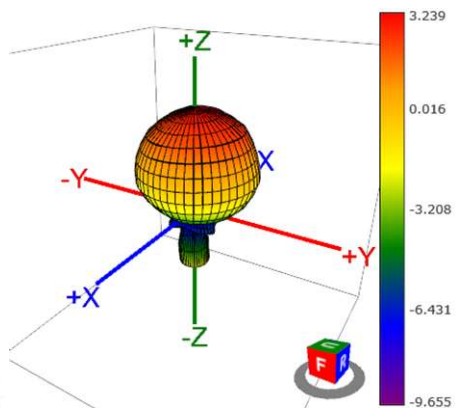
1176MHz



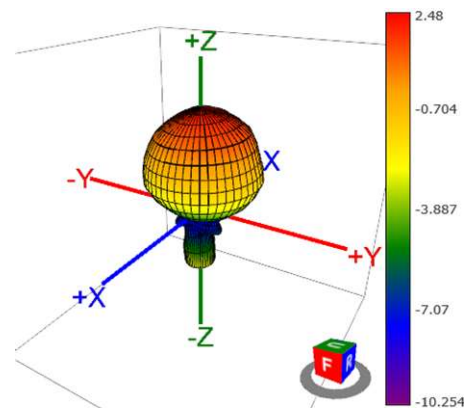
1227MHz



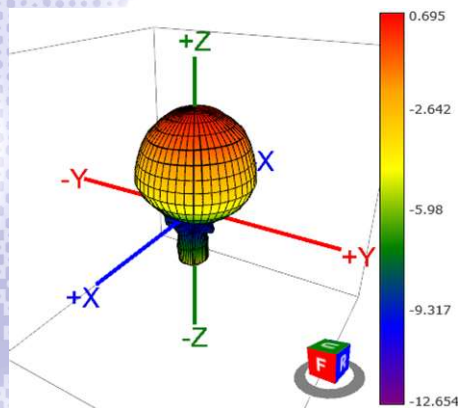
1561MHz



1575.42MHz



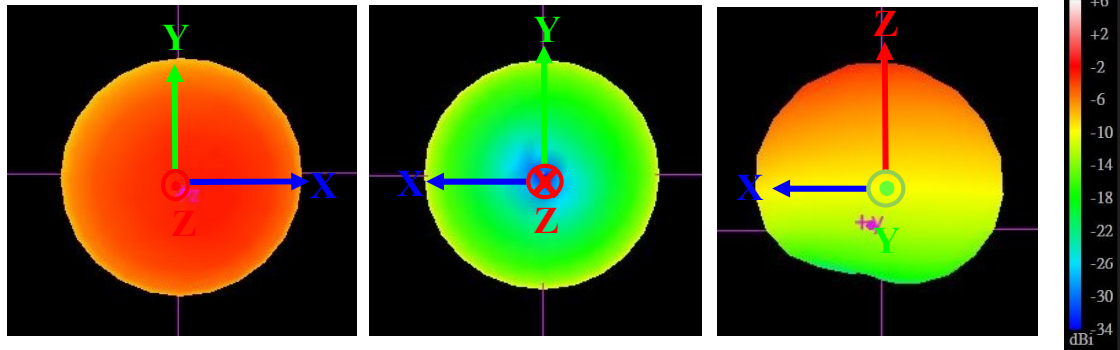
1602MHz



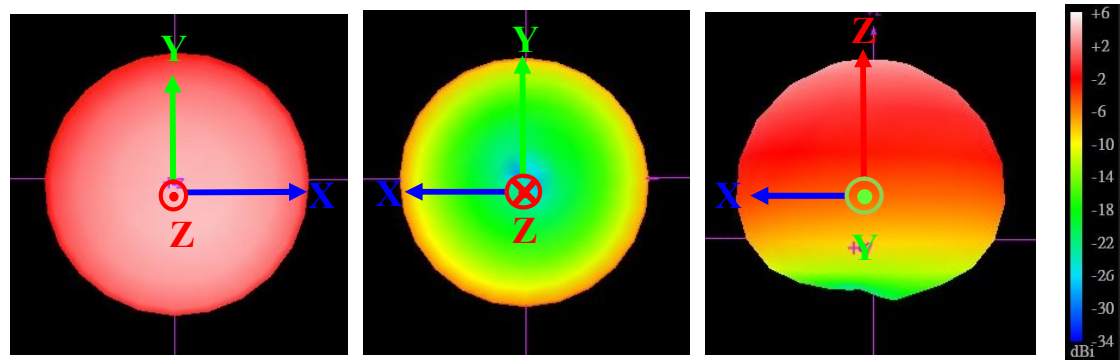
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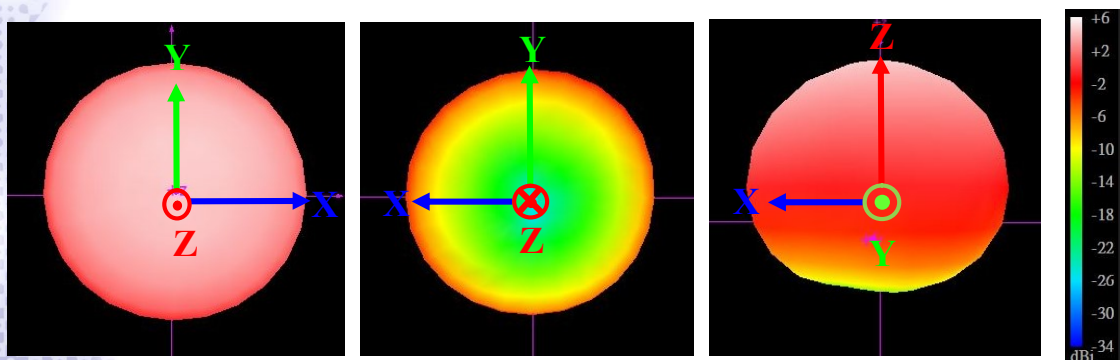
a) 1176MHz (unit: dBi)



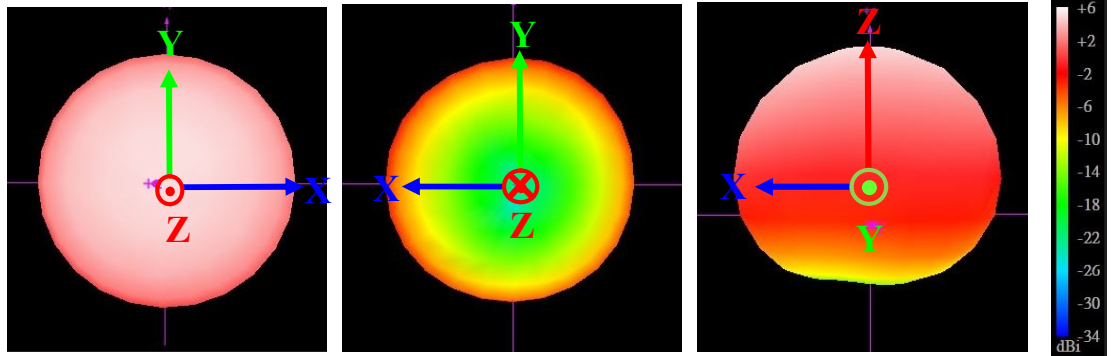
b) 1227MHz (unit: dBi)



c) 1561MHz (unit: dBi)

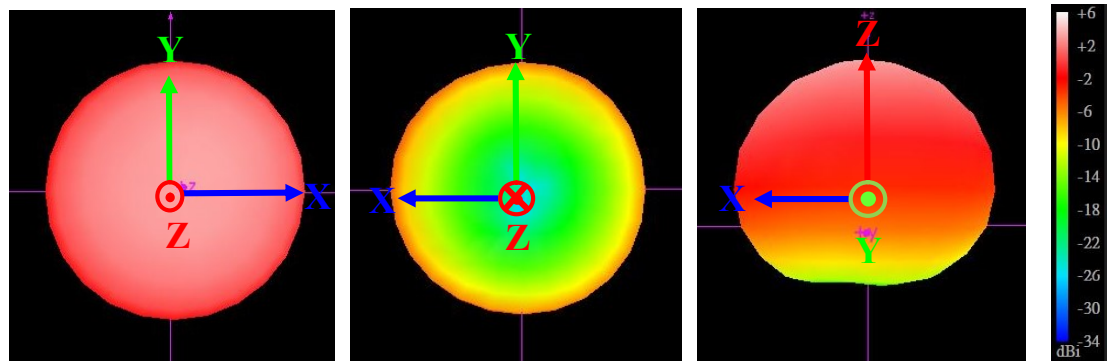


d) 1575MHz (unit: dBi)



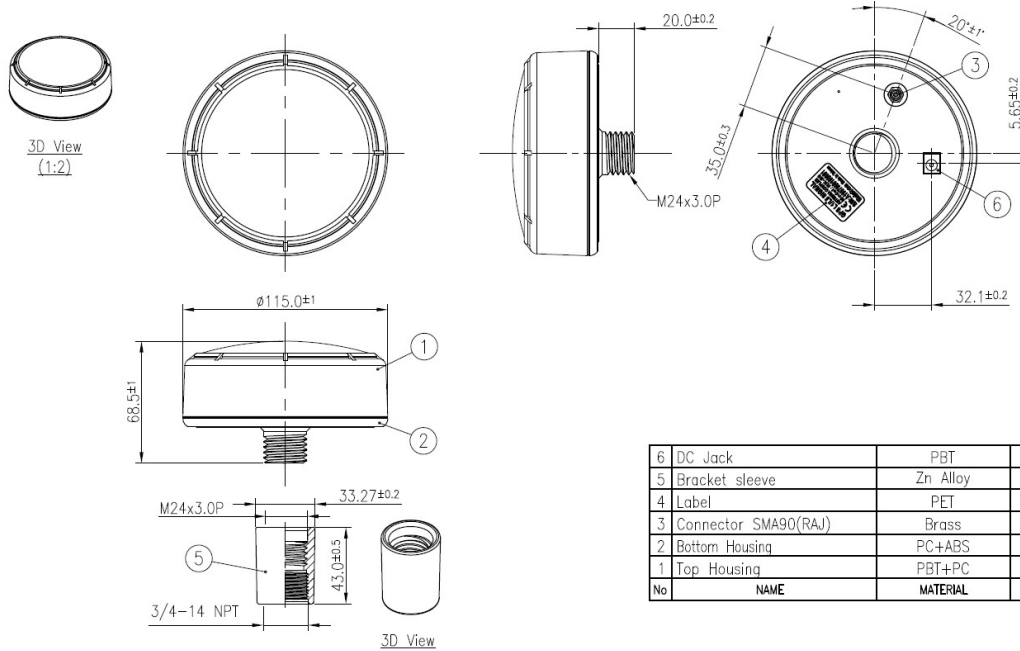
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e) 1602MHz (unit: dBi)



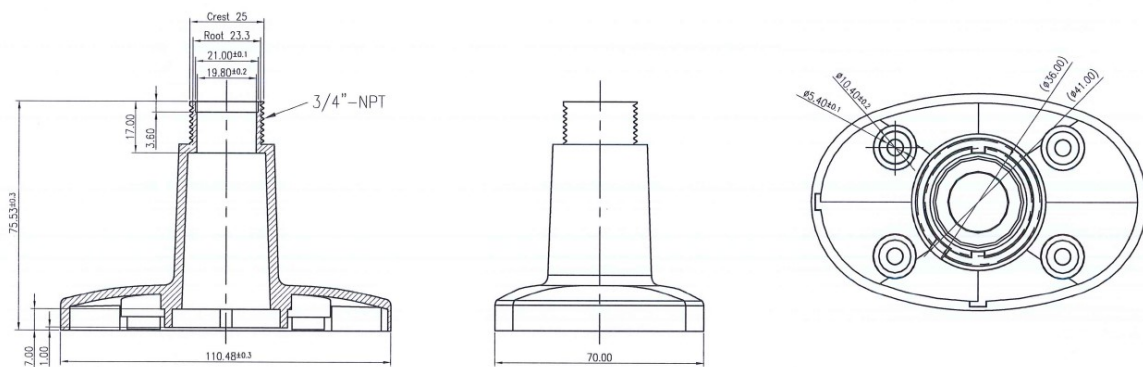
IV. Mechanical Drawing (Unit:mm):

RK-20

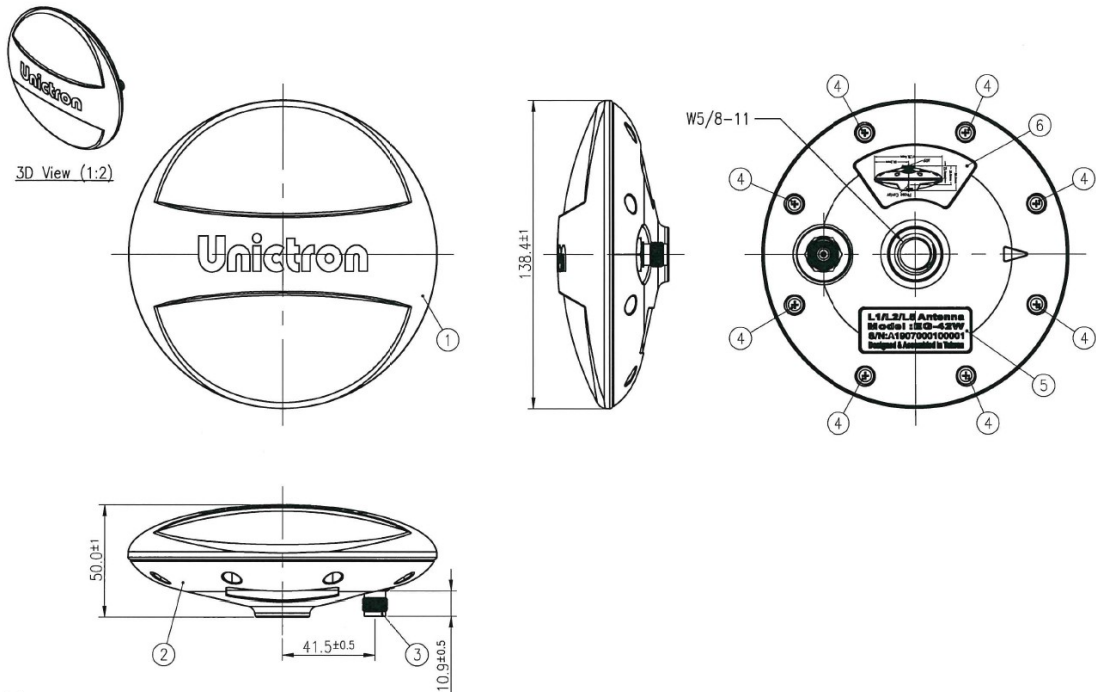


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RK-20 Bracket



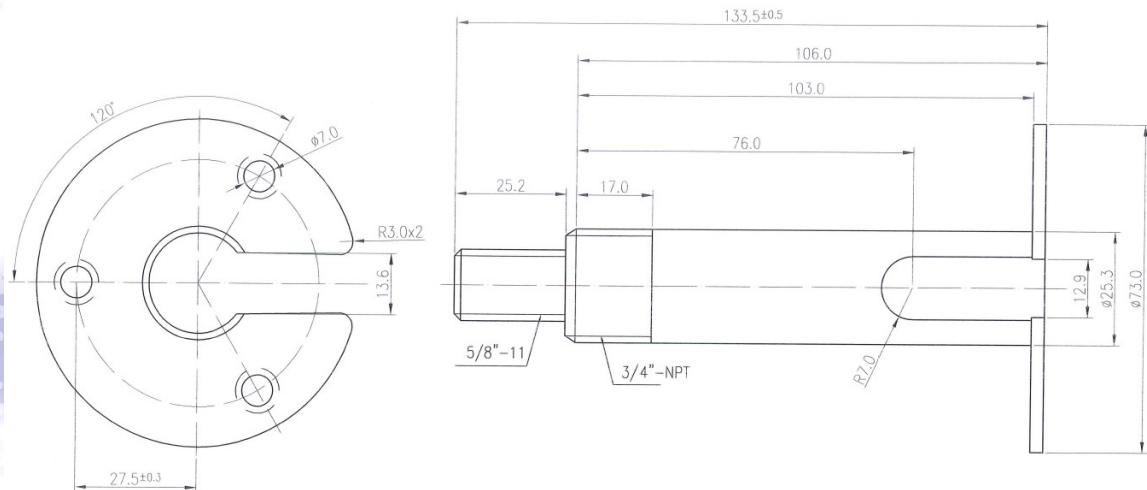
EG-42W



- Notes:
1. All material must be RoHS compliant.
 2. IP Code : IP67.

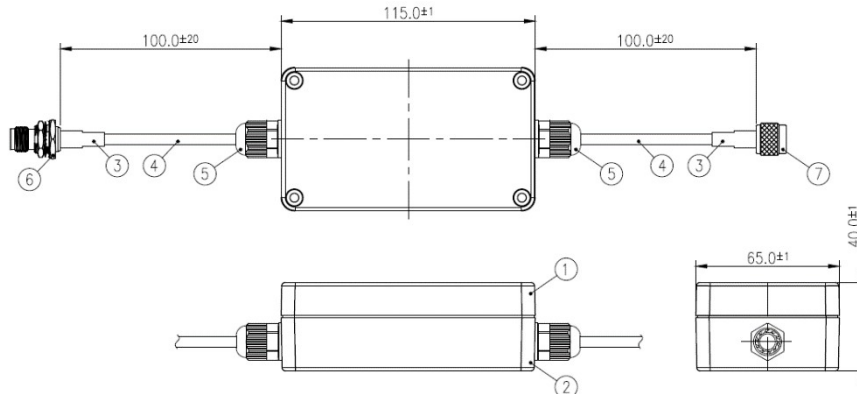
6	Label-2	PET	White	1
5	Label-1	PET	White	1
4	M3x10 Screw	Steel	Ni Plated	8
3	TNC(SBJ) Connector	Brass	Ni Plated	1
2	Bottom Base	Aluminum Alloy	Black	1
1	Top Housing	PC	White	1
No	NAME	MATERIAL	FINISH	Q'TY

EG-42W Steel tube seat



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EW-01 (Optional Accessory)



7	TNC(SP) Connector	Brass	Ni plating	1
6	TNC(SBJ) Connector	Brass	Ni plating	1
5	Cable Glands	Nylon	Black	2
4	Cable RG-58	PVC	Black	2
3	Heat Shrink Tube Inner Glue	EVA	Black	2
2	Bottom Housing	PC	Gray	1
1	Top Housing	PC	Gray	1
No	NAME	MATERIAL	FINISH	QTY

Notes:

1. All material must be RoHS compliant.



V. Package Include

	<p>Antenna x 1</p> <ul style="list-style-type: none"> ● 138.4mm (dia.) x 50.0mm
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	<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
	<p>Re-radiator x 1</p> <ul style="list-style-type: none"> ● 115mm (dia.) x 68.5mm (H)

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	<p>Bracket x 1</p> <ul style="list-style-type: none"> ● 110.48mm (dia.) x 75.53mm (H) ● PC+PBT / anti-UV
	<p>EW-01 x 1 (Optional Accessory)</p> <ul style="list-style-type: none"> ● 115.0mm (L) x 65.0mm (W) x 40.0mm (H) ● Gray TNC(SP)+RG58/TNC(SBJ)+RG58

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VI. Enclosure:

Transformer

1-1. This specification describes the physical, functional and electrical characteristics of the 6 single output 12 V 0.5 A

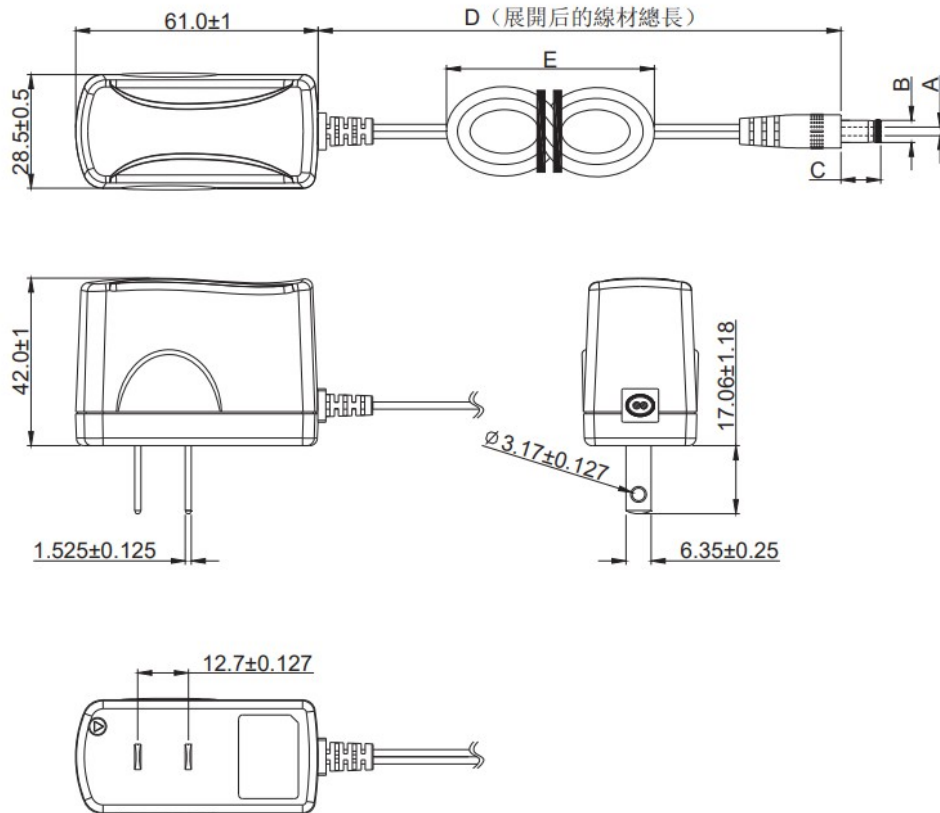
1-2. Input Voltage & Frequency

Item	Min	Normal	Max	unit
Input voltage range	90	100-240	264	Vac
Input frequency range	47	50/60	63	Hz

1-3. Input current

Input current should be lower than 0.3 Arms full-load at 100-240 Vac input voltage conditions.

1-4. Dimension (mm):



線材尺寸對照表					
序號	A	B	C	D	E
尺寸	2.1	5.5	11	1500	70
公差	±0.1	±0.1	±0.5	±30	±10
線材線號	UL 2468 26AWG				
DC頭型式	黑色 音叉卡勾				

DC頭型式



有音叉

