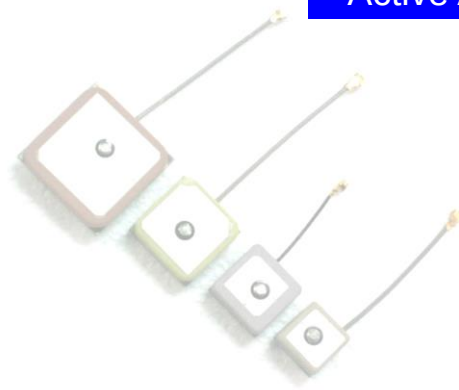




Product Name : Wide-band GNSS Active antenna
AMOTECH Part No. : AGA848424-S0-A2

	Designed	Checked		Approved
Date	/	/	/	/

Revision no	Content	Page	Date	Name
0	First, documented	-	2024.10.10	IJ.KIM
1	Appearance drawing & packing updated	4,15	2025.06.09	IJ.KIM



■ HEAD OFFICE 5B-1L, 617, NAMCHON-DONG, NAMDONG-GU, INCHOEN-CITY, KOREA TEL : 82-32-821-0363 FAX : 82-32-811-0283 ■ CHINA FACTORY WAISHANGGONGYEYUAN HIGH NEW TECHNOLOGY DEVELOPMENT AREA ZIBO SHANDONG P.R.CHINA 255086 TEL: 86-0533-358-7691 FAX: 86-0533-358-7689	Designed	Checked		Approved
				
	25.06.09		25.06.09	25.06.09

	SPECIFICATION	Page
	AGA848424-S0-A2	2/15

1. Specifications

1.1 Patch Antenna Element Electrical Specifications

No	Item	Spec.				Unit	Remark
		L/L1 Band		L5/L2/E6 Band			
1	Frequency	1535.0 ~ 1602.0		1166.0 ~ 1285.0		MHz	Note: 1)
2	Gain @Zenith	L Band	Typ. 5.4	L5 Band	Typ. 4.5	dBic	
		L1 Band	Typ. 5.0	L2 Band	Typ. 5.0		
		G1 Band	Typ. 3.6	E6 Band	Typ. 4.2		
3	Efficiency	L Band	Typ. 64	L5 Band	Typ. 55	%	
		L1 Band	Typ. 56	L2 Band	Typ. 60		
		G1 Band	Typ. 40	E6 Band	Typ. 50		
4	Axial Ratio @Zenith	Typ. 0.5 ~ 1.3		Typ. 1.9 ~ 2.9		dB	
5	Polarization	RHCP		RHCP		-	
6	Impedance	50				ohm	
7	Patch antenna	AGGSD35A60-4A-A-A1				-	

Note: 1) Measured on the 120Ø Iron ground plane / with case

1.2 LNA Electrical Specifications

No	Item	Spec.		Unit	Remark
		L/L1 Band	L5/L2/E6 Band		
1	Frequency	1535.0 ~ 1602.0	1166.0 ~ 1285.0	MHz	-
2	Gain	Typ. 31.0 @ 5V	Typ. 31.5 @5V	dB	
3	Noise Figure	Typ. 2.2 ~ 2.9 @5V	Typ. 2.3 ~ 2.6 @5V	dB	
4	Output VSWR	Typ. 2.0 : 1	Typ. 2.0 : 1	-	
5	Voltage Range	DC 3.0~5.0		V	
6	Maximum Voltage Rating	10		V	
7	Current	15.0 Typ. @ 5.0V		mA	
8	Impedance	50		ohm	

	SPECIFICATION	Page
	AGA848424-S0-A2	3/15

1.3 Overall Performance

No	Item	Spec.		Unit	Remark
		L/L1 Band	L5/L2/E6 Band		
1	Frequency	1535.0 ~ 1602.0	1166.0 ~ 1285.0	MHz	Note: 2)
2	Total System Zenith Gain	Typ. 26.7 ~ 29.2	Typ. 26.2 ~ 31.5	dBic	
3	Axial Ratio @Zenith	Typ. 0.4 ~ 1.0	Typ. 2.0 ~ 2.9	dB	
4	Output VSWR	Typ. 2.0 : 1	Typ. 2.0 : 1	-	
5	Output Impedance	50		ohm	
6	Cable Insertion Loss	Typ. -6.5	Typ. -5.5	dB	-

Note: 2) Measured on the 120Ø Iron ground plane, DC 5V, 5m RG174 cable, with case

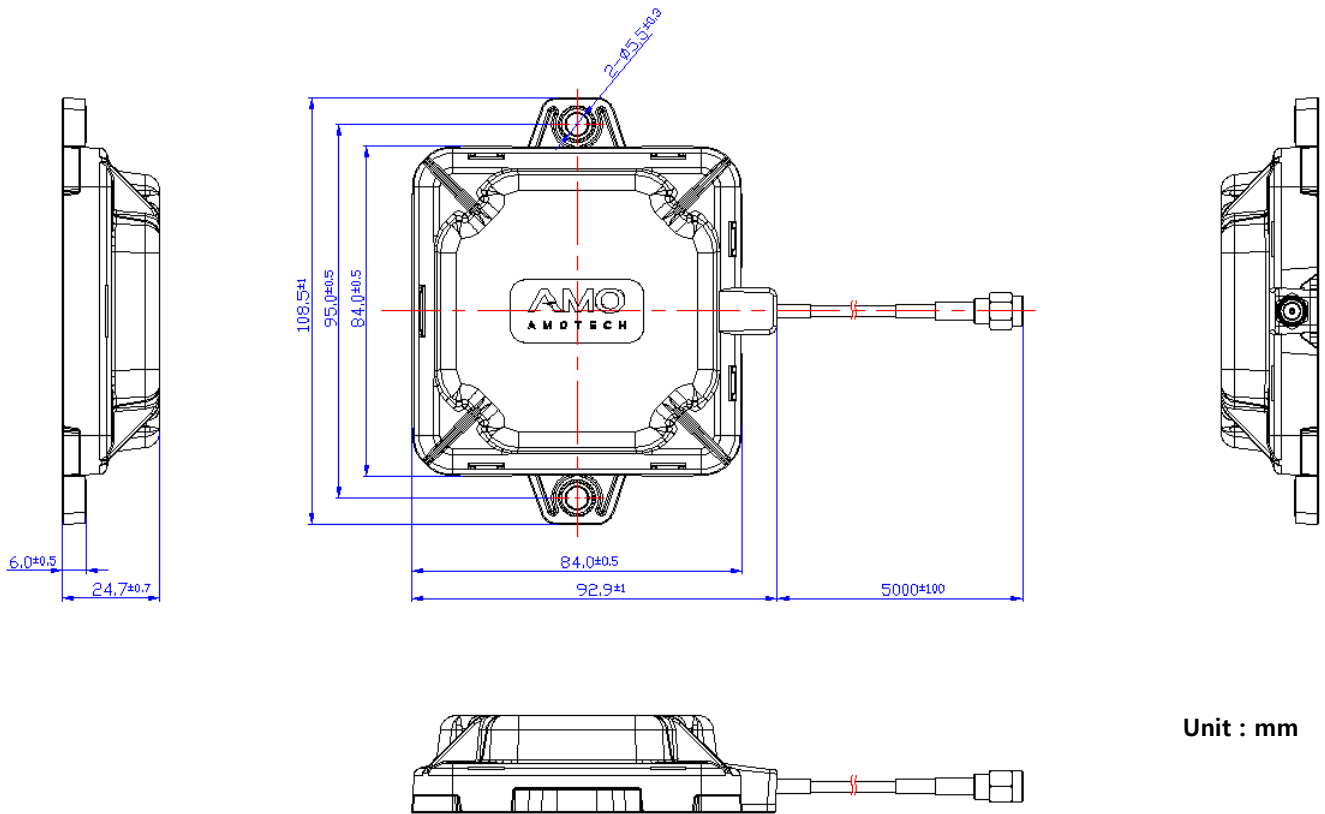
1.4 Mechanical Specifications

No	Item	Spec.	Unit
1	Width	108.5(L) * 92.9(W) * 24.7(T)	mm
2	Cable / Connector	RG174 Φ 2.9 mm L=5000±100 mm / SMA (ST, M)	-
3	Weight	Typ. 260.0	g
4	Mounting	Magnetic base & Screw	-
5	Housing Color/Material	Black/PC	-
6	Cable bending Radius	Min. 10.0	mm
7	Cable tensile strength	Min. 5.0	Kg

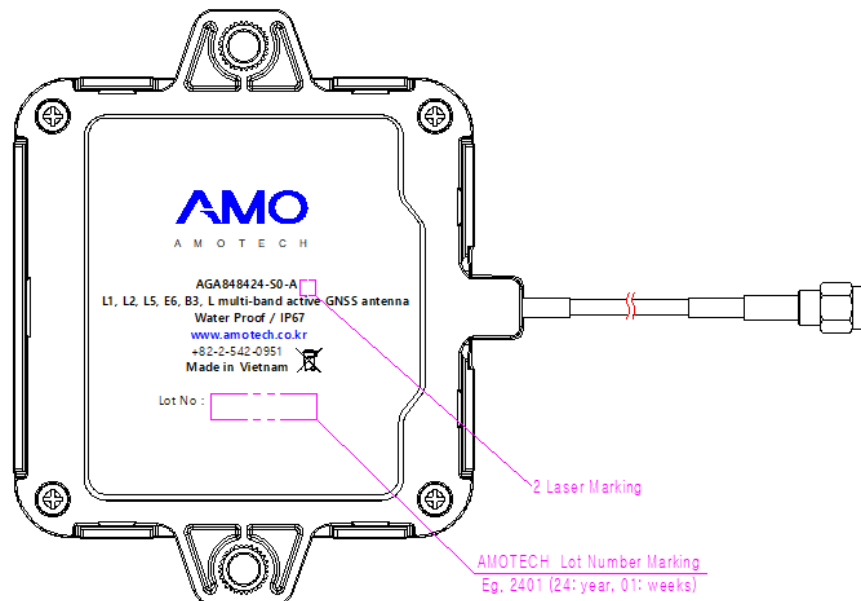
	SPECIFICATION	Page
	AGA848424-S0-A2	4/15

2. Appearance

2.1 Outer Appearance



2.2 Bottom Sticker Label



	SPECIFICATION	Page
	AGA848424-S0-A2	5/15

3. Part No.

Part No. : AGA XXXXXX - XX - XX
 (1) (2) (3) (4)

- (1) : AMOTECH GNSS Active Antenna
- (2) : Antenna Size
- (3) : Revision No.
- (4) : Model No.

4. Environmental Specifications

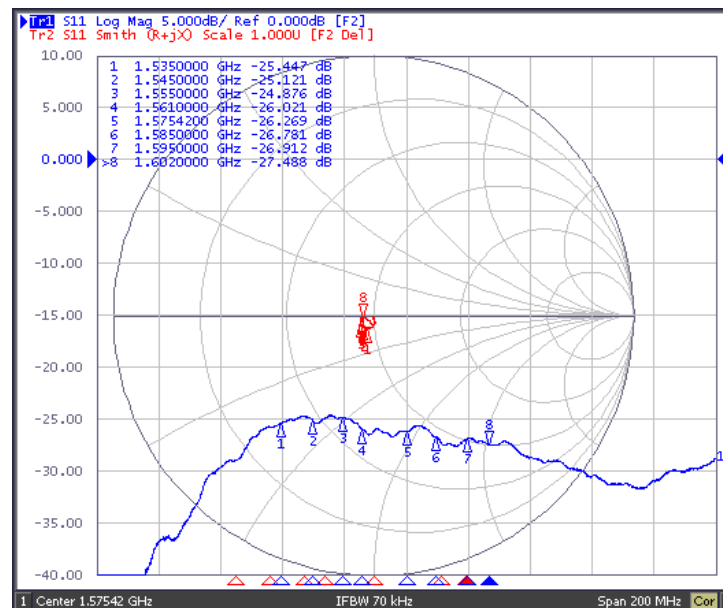
No	Item	Spec.	Unit
1	Operating Temp.	-40 ~ +85	°C
2	Storage Temp.	-40 ~ +85	°C
3	Water Proof	IP67	-

5. Typical Characteristics

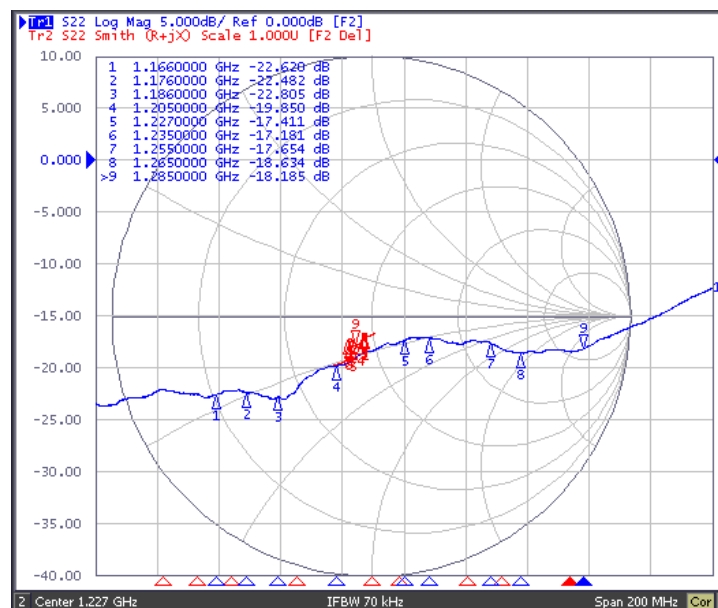
5.1 Typical S11 of Patch Antenna

(Test condition: with case, Hybrid coupler, on the 120Ø Iron Ground plane)

5.1.1 L/L1 Band (1535~1602MHz)



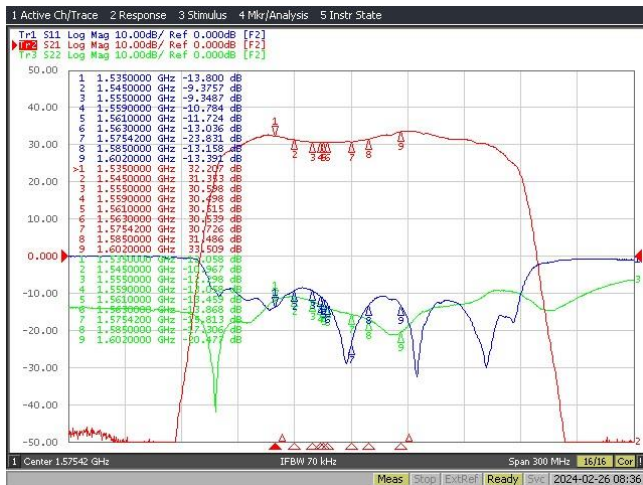
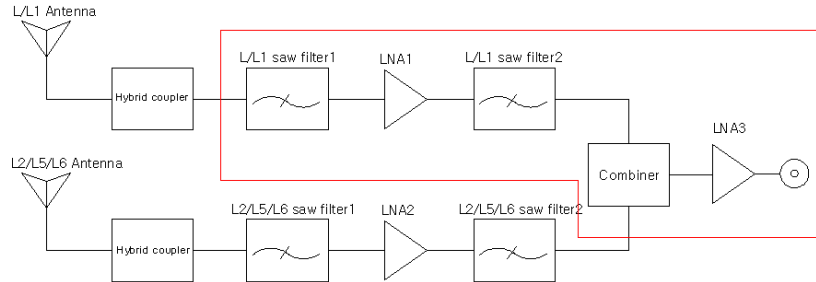
5.1.2 L2/L5/E6 Band (1166~1285MHz)



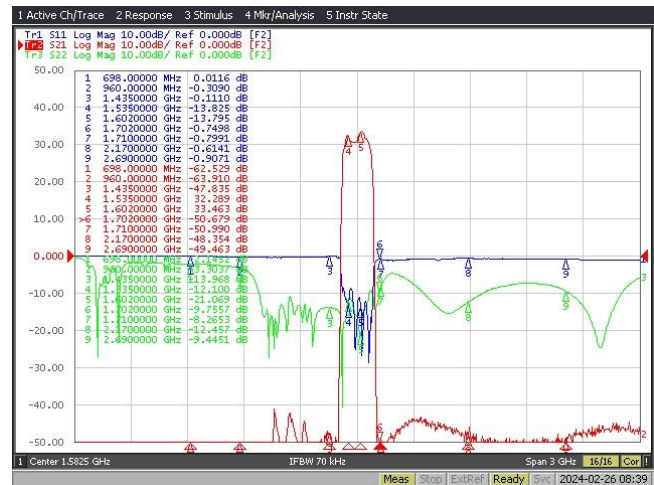
5.2 Typical LNA Electrical Characteristics

(Test condition: Only LNA Circuit, 50mm Semi-Rigid Cable, 15mA @ 5V Voltage.)

5.2.1 L/L1 band



< In band >



< Out of band >

► In band Gain

Freq.(MHz)	1535	1545	1555	1559	1561	1563	1575	1585	1595	1602
Gain(dB)	32.20	31.35	30.60	30.50	30.52	30.54	30.73	31.49	32.44	33.51
NF(dB)	2.98	2.88	2.63	2.55	2.45	2.43	2.34	2.21	2.35	2.50

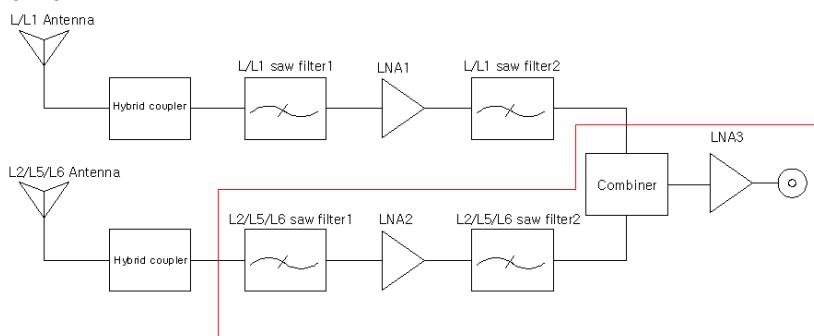
► Out of band Attenuation

Freq.(MHz)	698	960	1435(F0-100)	1702(F1+100)	1710	2170	2690
Atten.(dB)	94.82	96.20	80.12	84.14	84.45	81.82	82.93

※ L/L1 Band F_0 : 1535MHz. / F_1 : 1602MHz.

※ 698, 960, 1710, 2170, 2690 (MHz) is cellular band.

5.2.2 L2/L5/E6 band



< In band >



< Out of band >

► In band Gain

Freq.(MHz)	1166	1176	1186	1205	1227	1235	1255	1265	1285
Gain(dB)	32.98	32.29	31.78	31.39	31.51	31.50	31.03	30.68	30.22
NF(dB)	2.64	2.54	2.49	2.39	2.34	2.31	2.54	2.55	2.63

► Out of band Attenuation

Freq.(MHz)	698	960	1066(F0-100)	1385(F1+100)	1710	2170	2690
Atten.(dB)	99.01	78.84	73.66	70.73	65.64	89.69	81.99

※ L2/L5/E6 Band F_0 : 1166MHz. / F_1 : 1285MHz.

※ 698, 960, 1710, 2170, 2690 (MHz) is cellular band.

5.3 Group Delay Variation

(Test condition: Only LNA Circuit, Semi-Ridged SMA Cable, 15mA @ 5V Voltage.)

◆ GNSS L 1535 ~ 1559 band S_{21} (Group Delay)



Freq. (MHz)	1538 (MAX)	1557 (MIN)	(MAX-MIN)
GD (ns)	22.86	13.39	9.47

◆ GNSS L1 1559 ~ 1563 band S_{21} (Group Delay)



Freq. (MHz)	1561 (MAX)	1562 (MIN)	(MAX-MIN)
GD (ns)	18.18	11.79	6.39

◆ GNSS L1 1565 ~ 1585 band S_{21} (Group Delay)



Freq. (MHz)	1574 (MAX)	1576 (MIN)	(MAX-MIN)
GD (ns)	17.07	10.24	6.83

◆ GNSS L1 1597 ~ 1602 band S_{21} (Group Delay)



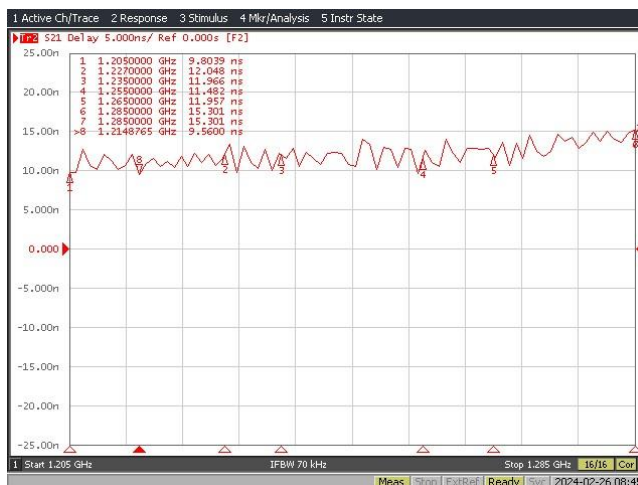
Freq. (MHz)	1602 (MAX)	1598 (MIN)	(MAX-MIN)
GD (ns)	21.48	13.65	7.83

◆ GNSS L5 1166 ~ 1186 band S_{21} (Group Delay)

◆ GNSS L2/E6 1205 ~ 1285 band S_{21} (Group Delay)



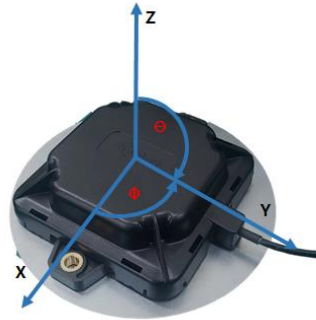
Freq. (MHz)	1166 (MAX)	1178 (MIN)	(MAX-MIN)
GD (ns)	16.37	11.25	5.12



Freq. (MHz)	1285 (MAX)	1214 (MIN)	(MAX-MIN)
GD (ns)	15.30	9.56	5.74

5.4 Overall Gain / Axial Ratio of active antenna

(Test condition: 5m RG174 Cable, On 120Ø Iron ground plane, Current 15mA @ 5V Voltage)



5.4.1 L/L1 Band Antenna RHCP Gain

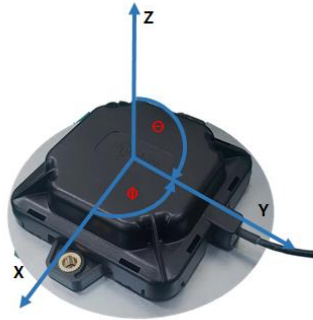
Frequency [MHz]	Average Gain [dBic]	Peak Gain [dBic]	Zenith Gain [dBic]	Zenith AR [dB]
1535	20.68	28.54	28.47	0.56
1545	20.09	28.07	27.96	0.59
1555	20.25	28.22	28.08	0.42
1559	20.62	28.54	28.43	0.41
1561	20.93	28.90	28.74	0.44
1563	21.34	29.35	29.17	0.47
1575	21.25	29.39	29.09	0.36
1585	20.94	28.79	28.61	0.51
1595	19.37	27.33	27.14	0.81
1602	19.10	26.95	26.68	0.98

5.4.2 L2/L5/E6 Band Antenna RHCP Gain

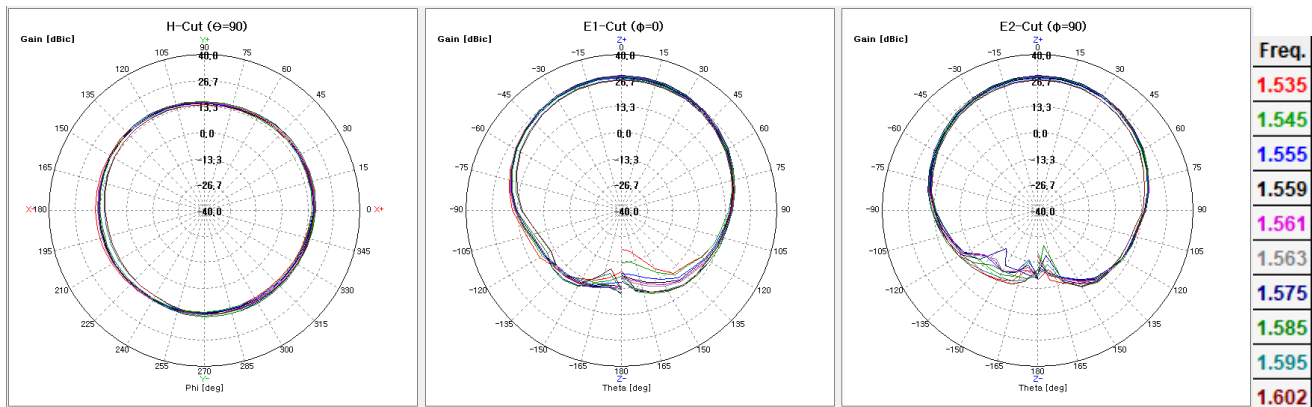
Frequency [MHz]	Average Gain [dBic]	Peak Gain [dBic]	Zenith Gain [dBic]	Zenith AR [dB]
1166	20.80	28.41	28.28	2.15
1176	22.60	30.21	30.10	2.15
1186	24.12	31.77	31.51	2.29
1205	22.49	30.08	29.89	1.95
1227	20.15	27.71	27.62	2.14
1235	19.60	27.23	27.16	2.25
1255	21.12	28.82	28.69	2.43
1265	20.56	28.41	28.25	2.73
1285	18.55	26.27	26.15	2.90

5.5 Radiation patterns of Active antenna

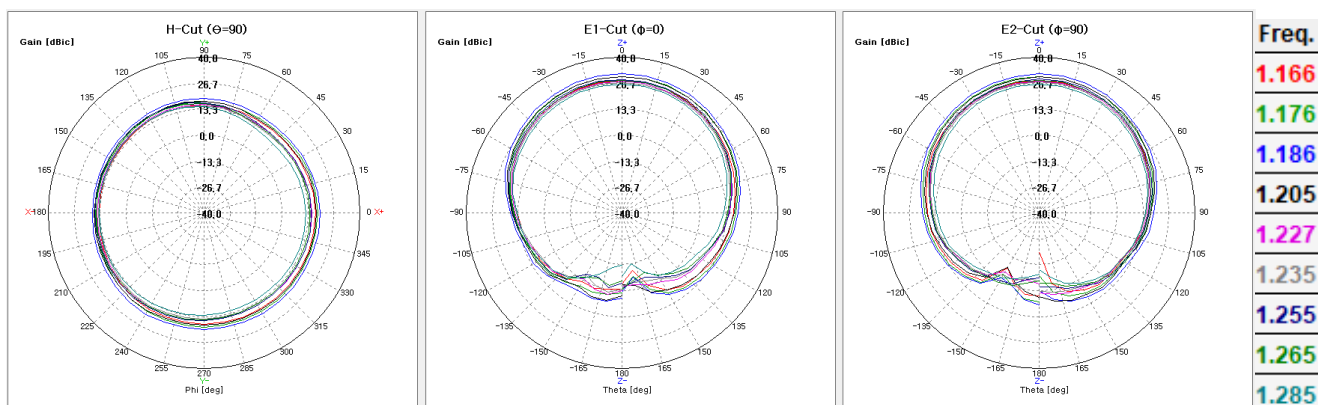
(Test condition: 5m RG174 Cable, on 120Ø Iron ground plane, Current 15mA @ 5V Voltage)



5.5.1 L/L1 Band



5.5.2 L2/L5/E6 Band



	SPECIFICATION	Page
	AGA848424-S0-A2	13/15

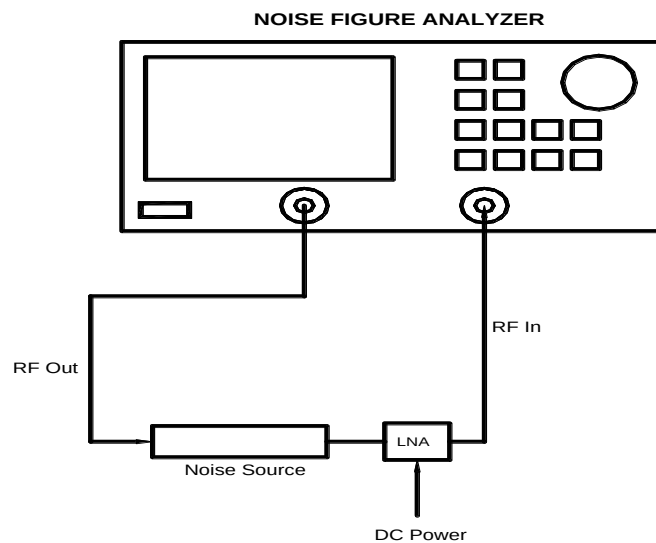
6. Test Method

6.1 LNA Gain and Noise Figure and Current Measurement

6.1.1 Measurement Equipment

- Noise Figure Analyzer, Power Supply, Bias Tee

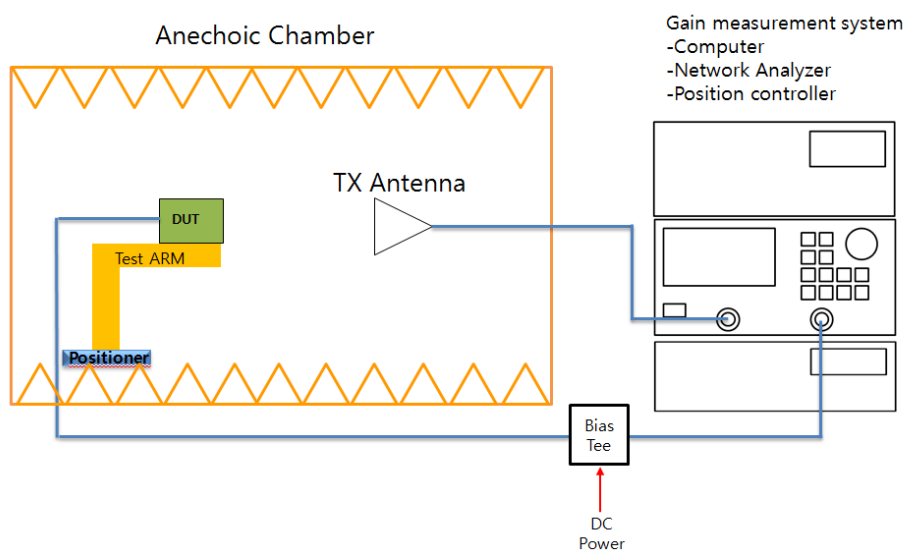
6.1.2 Measurement Diagram



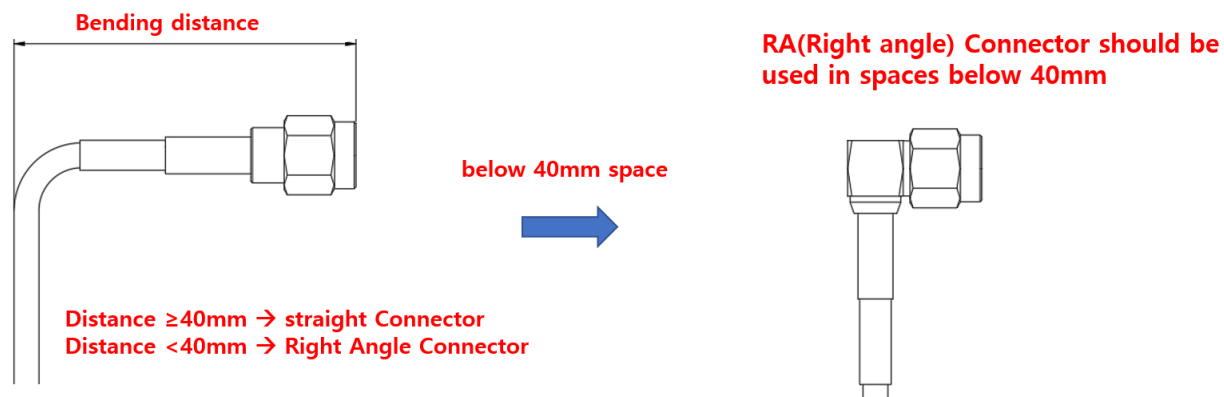
6.2 Overall Performance Measurement

6.2.1 Measurement Equipment

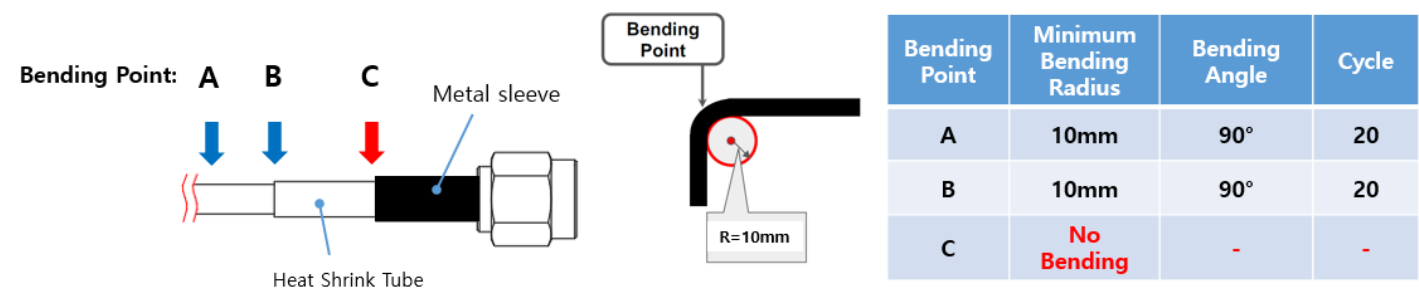
- Network Analyzer, Anechoic chamber System, Power Supply, Bias-Tee



7. RG174 & Connector Selection Guide



8. Bending Point & Min. Bending Test



	SPECIFICATION	Page
	AGA848424-S0-A2	15/15

9. Packing

9.1 P.E pack

- Dimension: 160 (W) x 220 (D) (mm)
- Quantity: 1 ea / pack



9.2 Inner box

- Dimension: 116 (W) x 180 (D) x 34 (H) (mm)
- Quantity: 1 ea (1 P.E pack) / Inner box



9.3 Outer box

- Dimension : 390(W) x 375(D) x 205(H) (mm)
- Quantity: 30 Inner box

