

# [APPROVAL SHEET]

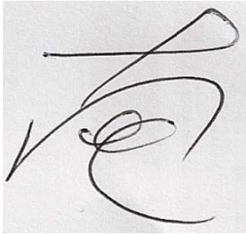
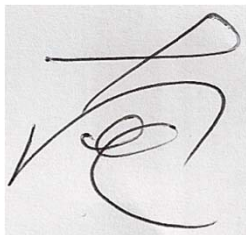
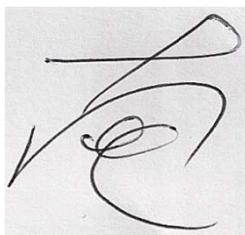


Nice Korea Components Co., Ltd

TEL : 031-470-8989

FAX : 031-470-8949

# [APPROVAL SHEET]

Product	RFID READER ANT	
Model	XM7-40 ANT_SUB_V100	
Designed by	Checked by	Approved by
		
/	/	/

2021. 05. 20

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## 2. Features & Applications

### 2.1 Features

This PCB READER antenna is applied to 860~928MHz band applications.

## 3. Electrical Specifications

3-1.

- \* All item are measured in room temperature (24~25 'C).
- \* All item are measured at customer set condition.

No.	Items	Typical Data
1	Frequency (MHz)	860~868
2	VSWR	1.5 : 1
3	Average Gain max [dBi]	-44.7
4	Impedance	50 ohm
5	Polarization	Linear

No.	Items	Typical Data
1	Frequency (MHz)	902~928
2	VSWR	1.5 : 1
3	Average Gain max [dBi]	-43.70
4	Impedance	50 ohm
5	Polarization	Linear

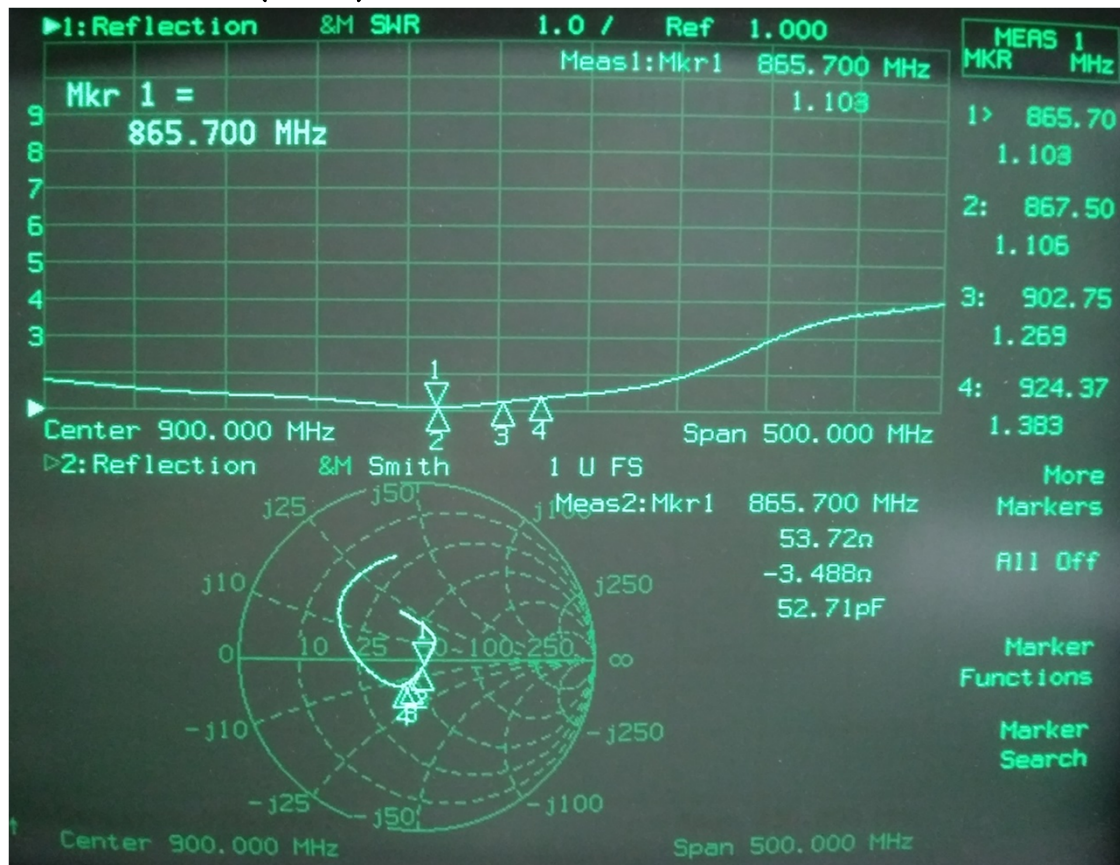
FREQ. (MHz)	860	865	868	902	920	928
AVG. Gain	-44.7	-44.9	-45.17	-44.58	-43.86	-43.70

3D Result Summary :

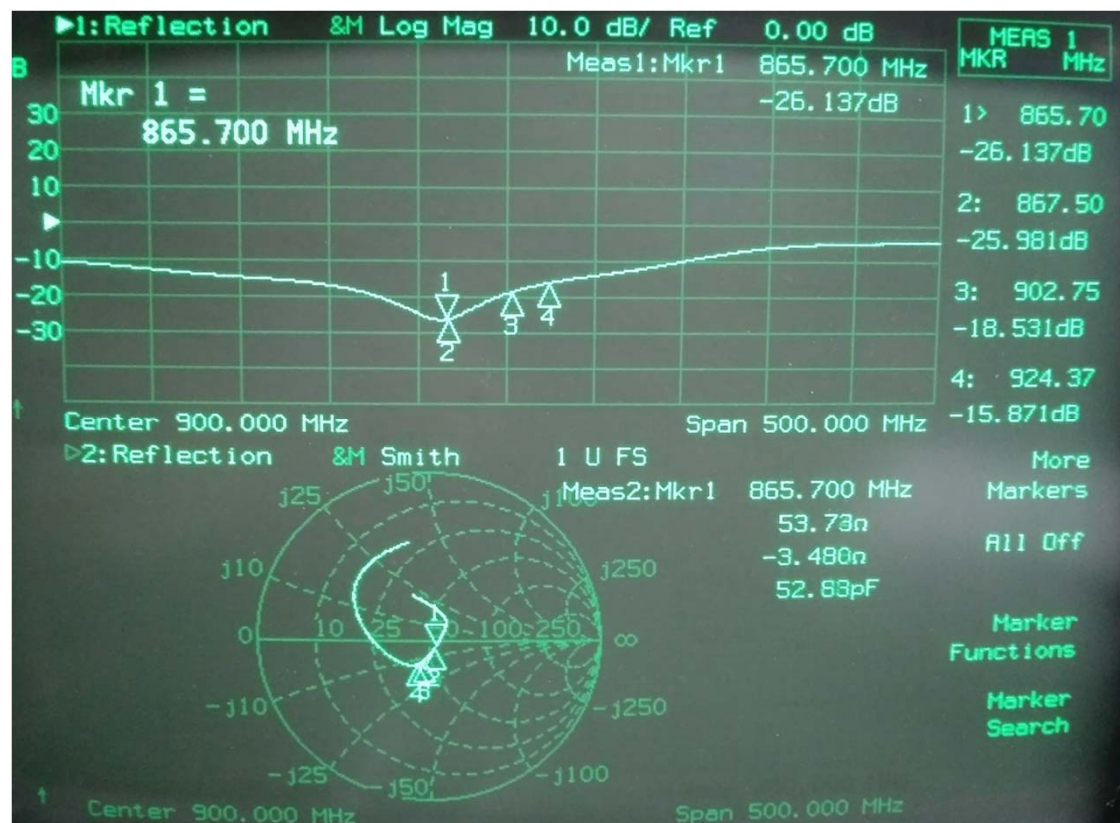
No	Freq.[GHz]	θ-Pol(H)					φ-Pol(V)					PwrSum				
		Eff.[%]	Avg.[dBi]	Peak[dBi]	θ[deg]	φ[deg]	Eff.[%]	Avg.[dBi]	Peak[dBi]	θ[deg]	φ[deg]	Eff.[%]	Avg.[dBi]	Peak[dBi]	θ[deg]	φ[deg]
1	0.860	0.00	-46.20	-37.82	160.00	190.00	0.00	-50.06	-38.44	180.00	130.00	0.00	-44.70	-36.67	165.00	185.00
2	0.865	0.00	-46.54	-37.60	160.00	195.00	0.00	-49.93	-38.40	180.00	120.00	0.00	-44.90	-36.50	165.00	195.00
3	0.867	0.00	-46.79	-37.65	160.00	190.00	0.00	-49.95	-38.33	180.00	125.00	0.00	-45.08	-36.75	165.00	180.00
4	0.868	0.00	-46.94	-37.88	165.00	190.00	0.00	-49.93	-38.58	180.00	115.00	0.00	-45.17	-36.74	165.00	190.00
5	0.902	0.00	-47.48	-37.64	165.00	195.00	0.00	-47.70	-38.00	175.00	130.00	0.00	-44.58	-36.51	165.00	250.00
6	0.904	0.00	-47.57	-37.89	165.00	240.00	0.00	-47.68	-37.59	180.00	135.00	0.00	-44.61	-36.45	165.00	235.00
7	0.906	0.00	-47.48	-37.74	165.00	240.00	0.00	-47.50	-37.60	180.00	135.00	0.00	-44.48	-36.35	170.00	215.00
8	0.908	0.00	-47.28	-37.58	165.00	230.00	0.00	-47.18	-37.55	180.00	135.00	0.00	-44.22	-36.04	170.00	215.00
9	0.910	0.00	-47.10	-37.41	165.00	240.00	0.00	-46.84	-37.05	180.00	130.00	0.00	-43.96	-35.78	165.00	235.00
10	0.912	0.00	-47.12	-37.42	165.00	225.00	0.00	-46.86	-37.24	180.00	135.00	0.00	-43.97	-35.83	165.00	245.00
11	0.914	0.00	-47.11	-37.35	165.00	240.00	0.00	-46.83	-37.30	180.00	135.00	0.00	-43.96	-35.75	165.00	245.00
12	0.916	0.00	-47.08	-37.39	165.00	230.00	0.00	-46.78	-37.30	180.00	135.00	0.00	-43.91	-35.90	165.00	240.00
13	0.918	0.00	-47.06	-37.36	165.00	240.00	0.00	-46.73	-37.31	180.00	135.00	0.00	-43.88	-35.91	165.00	245.00
14	0.920	0.00	-47.03	-37.43	165.00	240.00	0.00	-46.71	-37.44	180.00	155.00	0.00	-43.86	-35.95	165.00	230.00
15	0.922	0.00	-46.95	-37.33	165.00	240.00	0.00	-46.68	-37.37	180.00	130.00	0.00	-43.80	-35.85	165.00	240.00
16	0.924	0.00	-46.89	-37.38	165.00	230.00	0.00	-46.67	-37.38	180.00	135.00	0.00	-43.77	-35.89	165.00	235.00
17	0.926	0.00	-46.87	-37.33	165.00	230.00	0.00	-46.66	-37.46	180.00	155.00	0.00	-43.76	-35.87	165.00	230.00
18	0.928	0.00	-46.80	-37.48	165.00	235.00	0.00	-46.63	-37.47	180.00	130.00	0.00	-43.70	-35.75	170.00	225.00
19	0.930	0.00	-46.61	-37.28	165.00	240.00	0.00	-46.48	-37.36	180.00	130.00	0.00	-43.53	-35.70	170.00	215.00



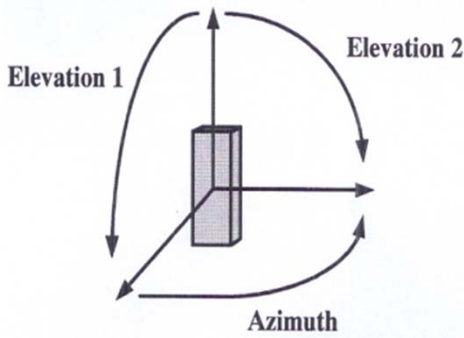
### 3-2. VSWR (S<sub>11</sub>) of READER ANT



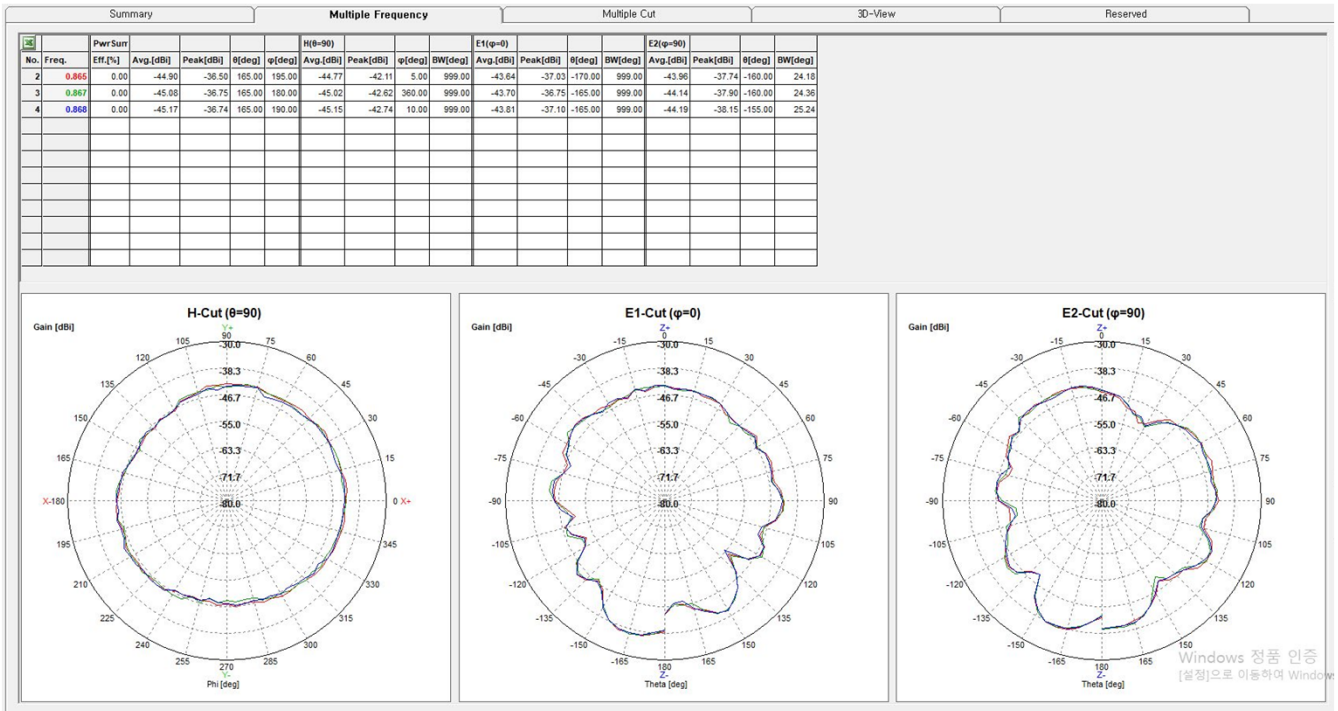
### 3-2.1 Log (S<sub>11</sub>) of READER ANT



### 3-3. 2D Radiation Patterns (865~868MHz)

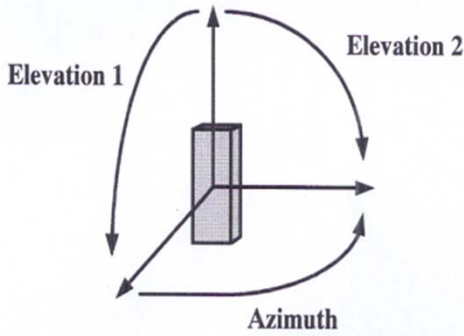


Theta	Vertical Field of measured plane
Phi	Horizontal Field of measured plane

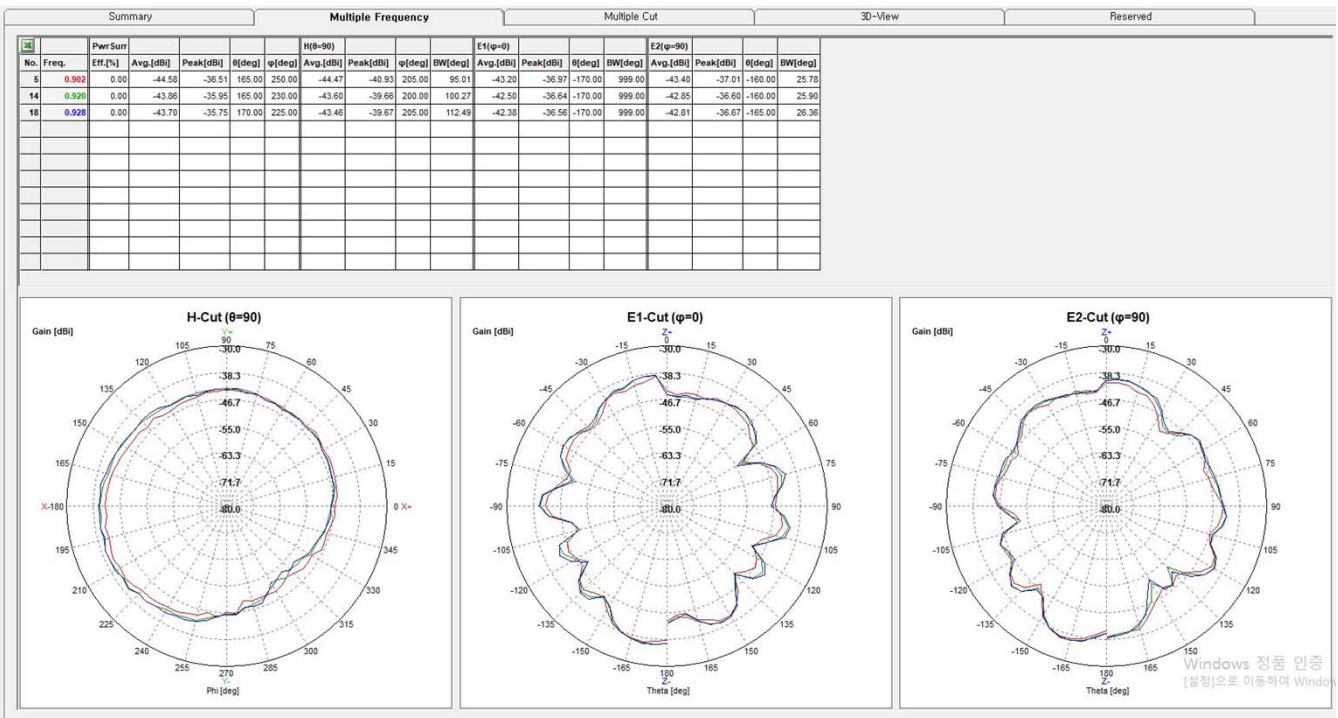


이득 [dBi] (Co-Pola)	Azimuth	Phi	Peak	-42.11
			Avg	-44.77
	Elevation	Theta	Peak	-37.03
			Avg	-43.64

# 3-3. 2D Radiation Patterns (902~928MHz)



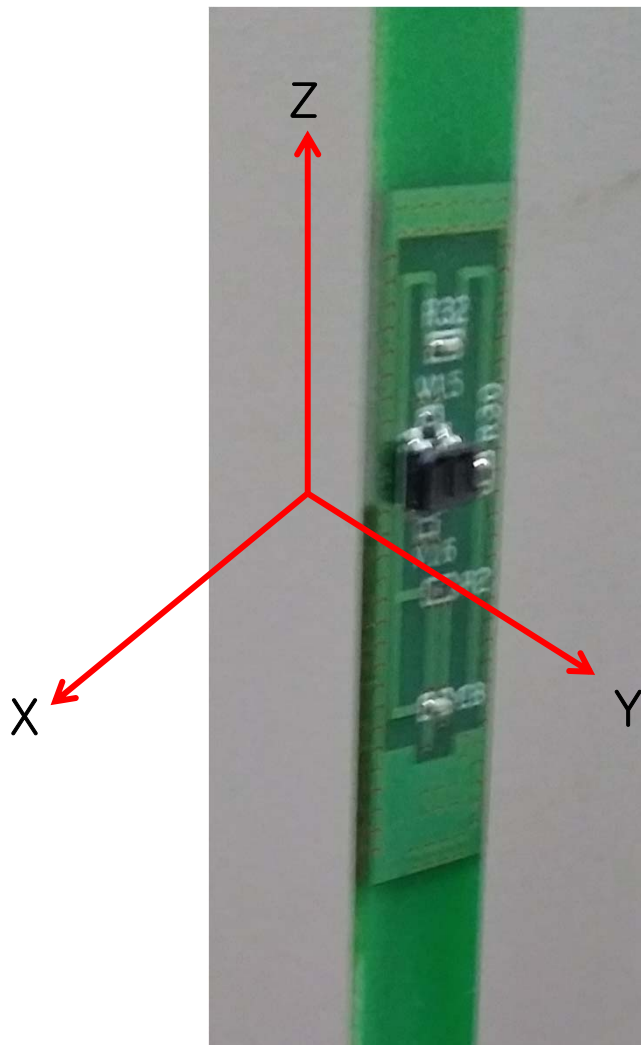
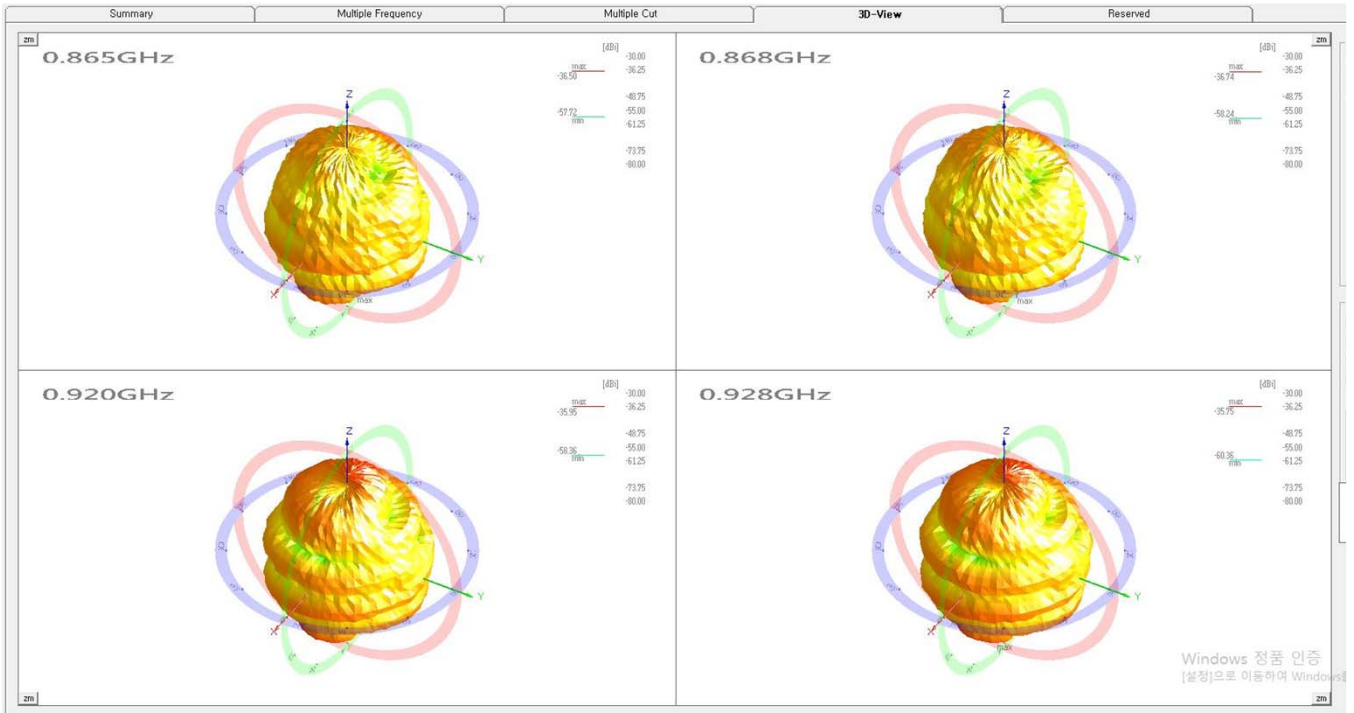
Theta	Vertical Field of measured plane
Phi	Horizontal Field of measured plane



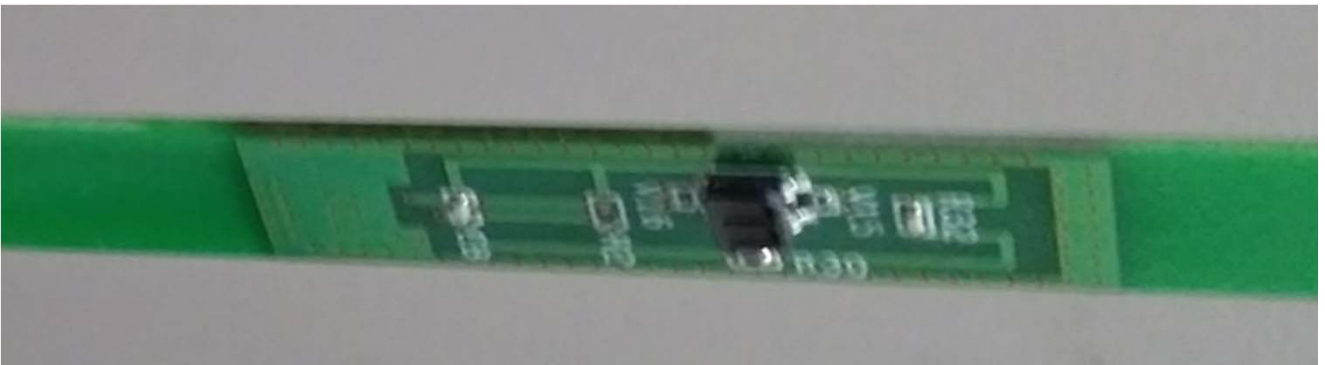
이득 [dBi] (Co-Pola)	Azimuth	Phi	Peak	-43.46
			Avg	-39.67
	Elevation	Theta	Peak	-42.38
			Avg	-36.56



### 3-3. 3D Radiation Patterns (865~928MHz)



## 4. Matching Circuits

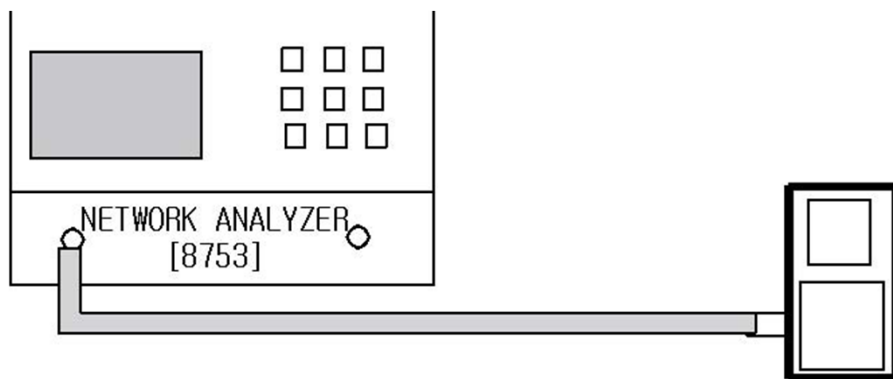


R2	R30	R32	C8
51 ohm	51 ohm	3pF	1pF

## 5. Measurements Method & Conditions

The measurement of antenna performance is measurement of gain, radiation pattern using ORBIT/FR apparatus in Anechoic chamber and measurement of VSWR using Network analyzer.

### 5-1. The measurement of Frequency and VSWR



#### [Measurement Method]

1. As seen the above, network analyzer is set up for S11 measurement.
2. The measurement frequency range is to set up from 2 GHz to 3 GHz.
3. Perform S11 one port full calibration.
4. Measure the VSWR of three points of Bluetooth frequency range such as 2.4 GHz, 2.45 GHz, and 2.5 GHz.

### 5-2. The measurement of Gain & Radiation Patterns

