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NA2203B-3C

Antenna Specifications

Issue 1.0 Date 2022-03-25

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About This Document

Scope

This document is applicable to NA2203B-3C.

Audience

This document is intended for system engineers (SEs), development engineers, and test engineers.

Change History

Issue	Date	Change	Changed By
1.0	2022-03	Initial draft	Yang Pin

Conventions

Symbol	Indication
	Indicates danger or warning. This information must be followed. Otherwise, a catastrophic module or user device failure or bodily injury may occur.
	Indicates caution. This symbol alerts the user to important points about using the module. If these points are not followed, the module or user device may fail.
	Indicates instructions or tips. This symbol provides advices or suggestions that may be useful when using the module.

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1 Product Specifications

Type: 4G Antenna

Passive Electromagnetic Characteristics			
Frequency Range (MHz)	824-960/1710-2170/2300-2690	Polarization	Linear
VSWR	≤ 5.0/3.0/2.0	Impedance (Ω)	50
Gain (dBi)	4.4	Efficiency	74%
Mechanical Characteristics			
Antenna Size (mm)	40 x 7 x 3	Radom Color	Blue
Material	FR4	Working Temperature (°C)	-35 to +70
Connect Type	SMD		

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2 Product Features

- The antenna has a high radiation efficiency in all frequency bands, low-frequency radiation efficiency ≥ 40%, medium and high-frequency radiation efficiency ≥ 60%.
- Adopting SMD welding process. With high consistency and stability in performance.
- The antenna size is small, which facilitates the built-in installation.

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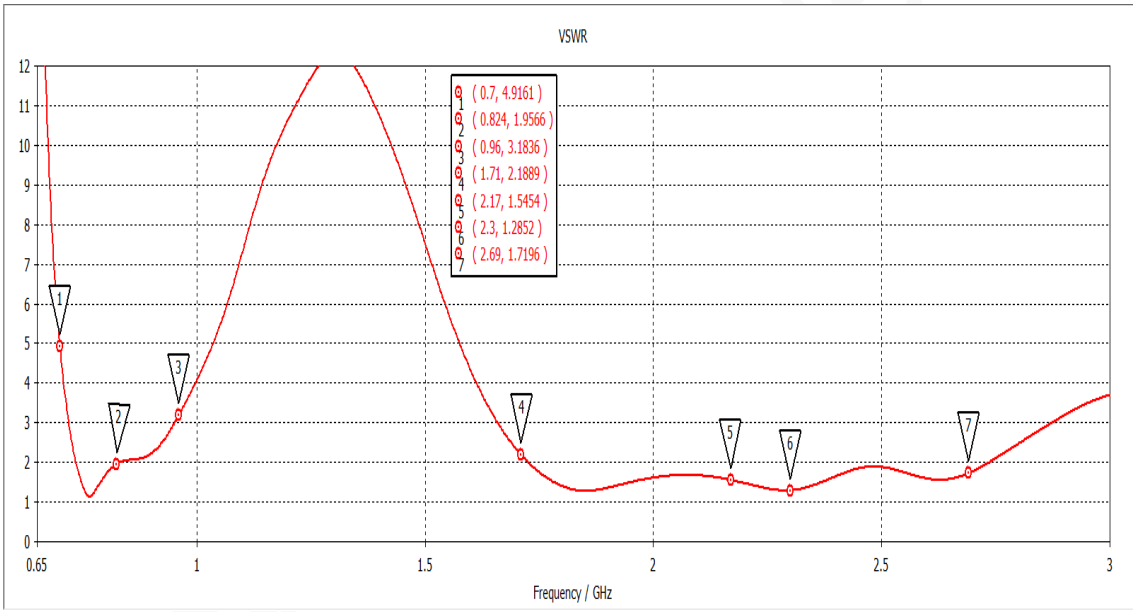
3 Antenna Passive Performance

3.1 VSWR

Table 3-1 VSWR

Frequency (MHz)	700	824	960	1710	2170	2300	2690
VSWR	4.916	1.957	3.184	2.189	1.545	1.285	1.720

Figure 3-1 VSWR



3.2 Gain and Efficiency

700-960MHZ

Table 3-2 Gain and efficiency

Frequency (MHz)	Efficiency (%)	Gain (dBi)
700	43.74	1.258
720	53.34	1.413

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740	60.53	1.58
760	65.03	1.72
780	66.98	1.796
800	66.95	1.798
820	65.63	1.749
840	63.7	1.689
860	61.61	1.652
880	59.56	1.651
900	57.5	1.683
920	55.24	1.737
940	52.59	1.795
960	49.44	1.838

Figure 3-2 Efficiency (700-960 MHZ)

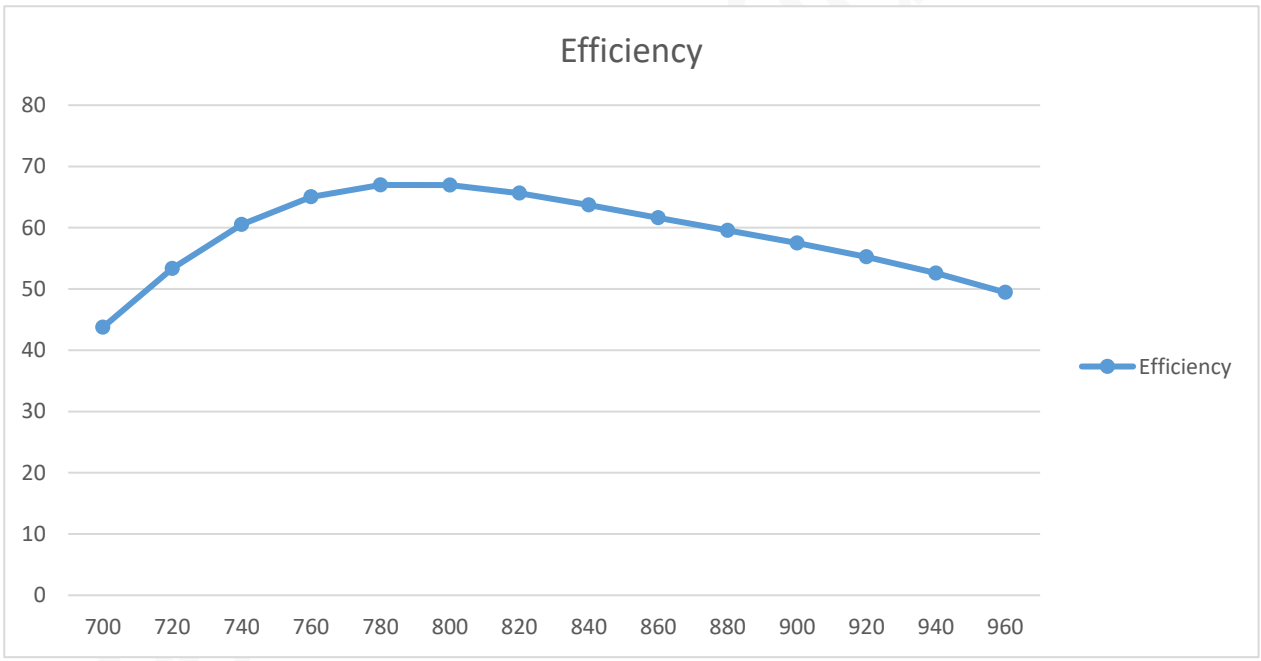

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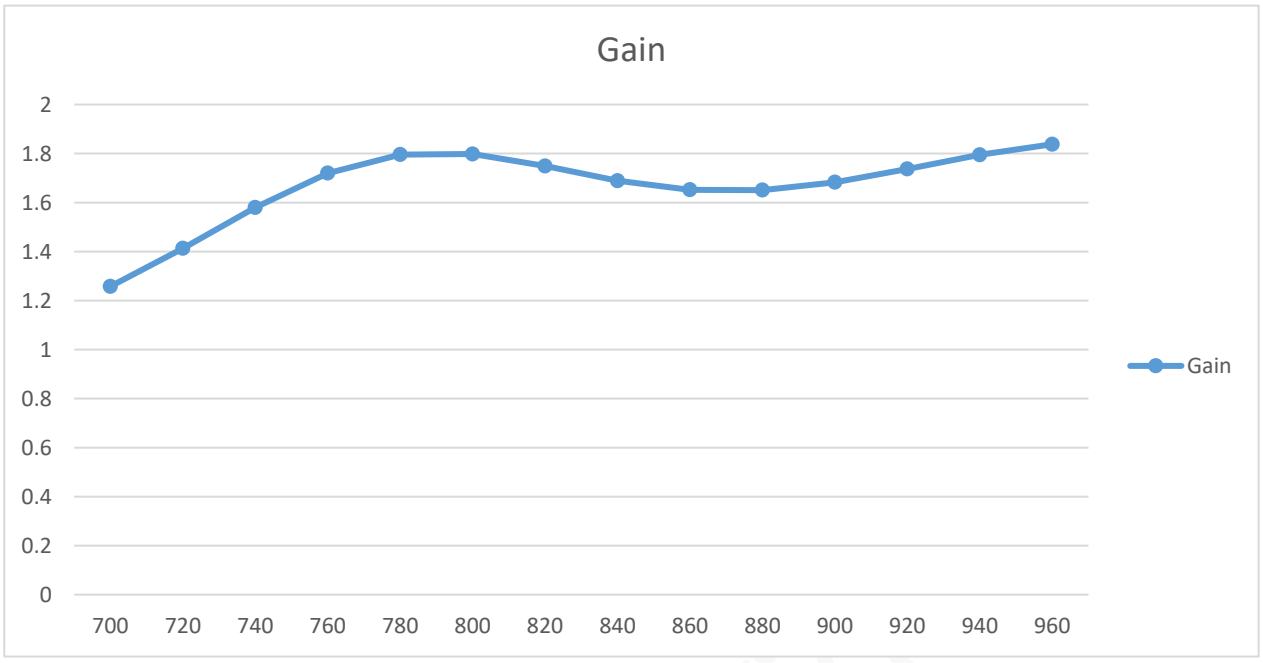
Figure 3-3 Gain (700-960 MHZ)



1710-2690MHZ

Table 3-3 Gain and efficiency

Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)
1710	71.61	2.778	2090	68.85	2.992
1730	73.2	2.768	2110	69.25	3.036
1750	74.2	2.759	2130	69.72	3.084
1770	74.68	2.752	2150	70.23	3.314
1790	74.73	2.747	2170	70.74	3.188
1810	74.45	2.743	2300	70.2	3.694
1830	73.92	2.742	2330	68.44	3.807
1850	73.24	2.742	2360	66.16	3.892
1870	72.46	2.746	2390	63.77	3.922
1890	71.65	2.751	2420	61.77	3.875
1910	70.87	2.76	2450	60.64	3.733
1930	70.15	2.772	2480	60.67	3.506
1950	69.52	2.788	2510	61.74	3.242
1970	69.02	2.806	2540	63.4	3.181
1990	68.65	2.829	2570	64.99	3.54
2010	68.42	2.855	2600	65.85	3.862
2030	68.32	2.884	2630	65.57	4.116
2050	68.37	2.916	2660	64.04	4.33

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2070	68.55	2.952	2690	61.45	4.496

Figure 3-4 Efficiency (1710-2690 MHZ)

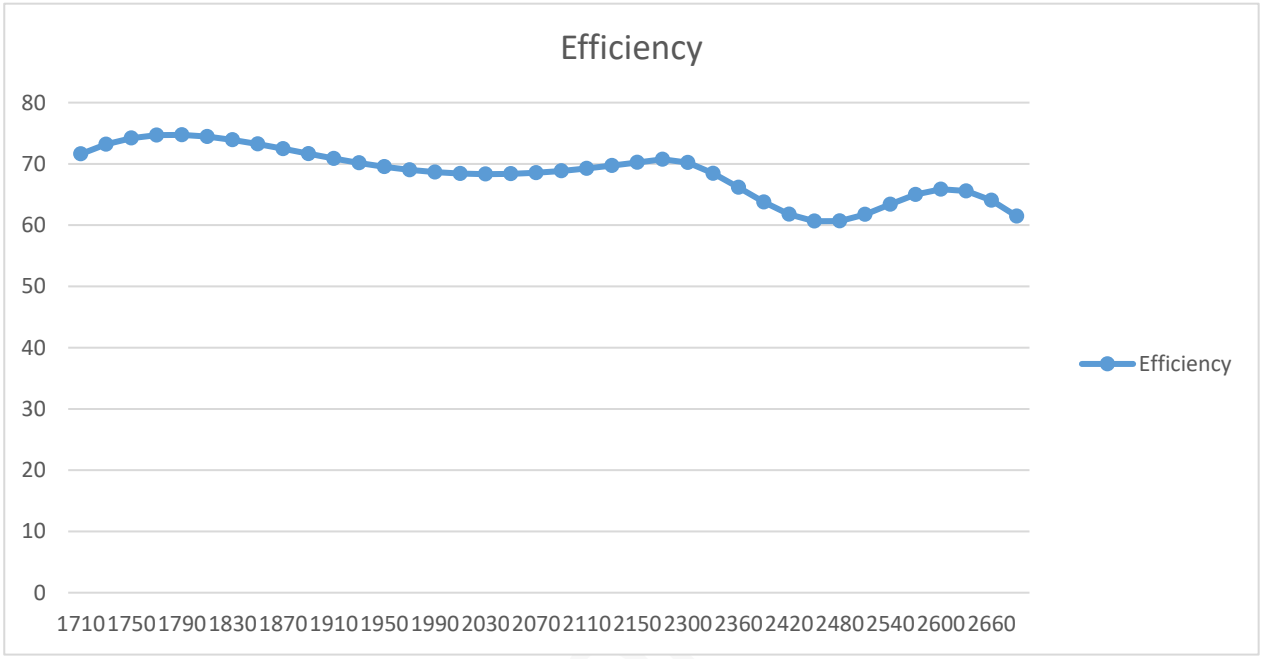
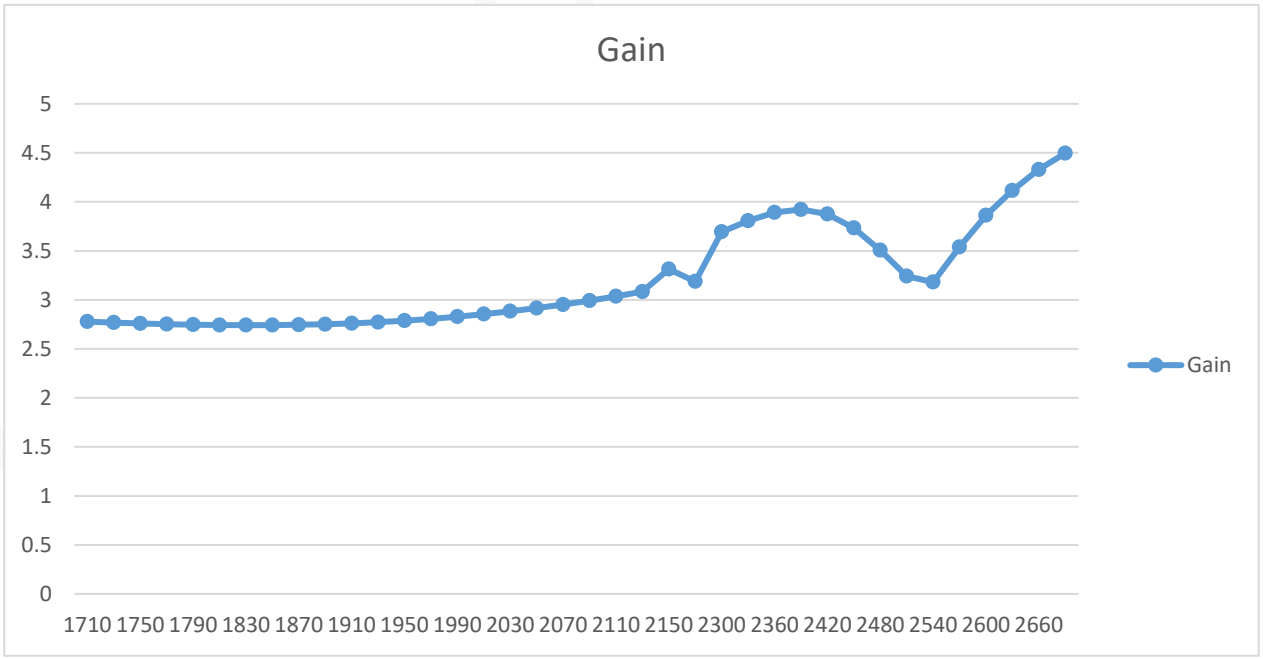


Figure 3-5 Gain (1710-2700 MHZ)



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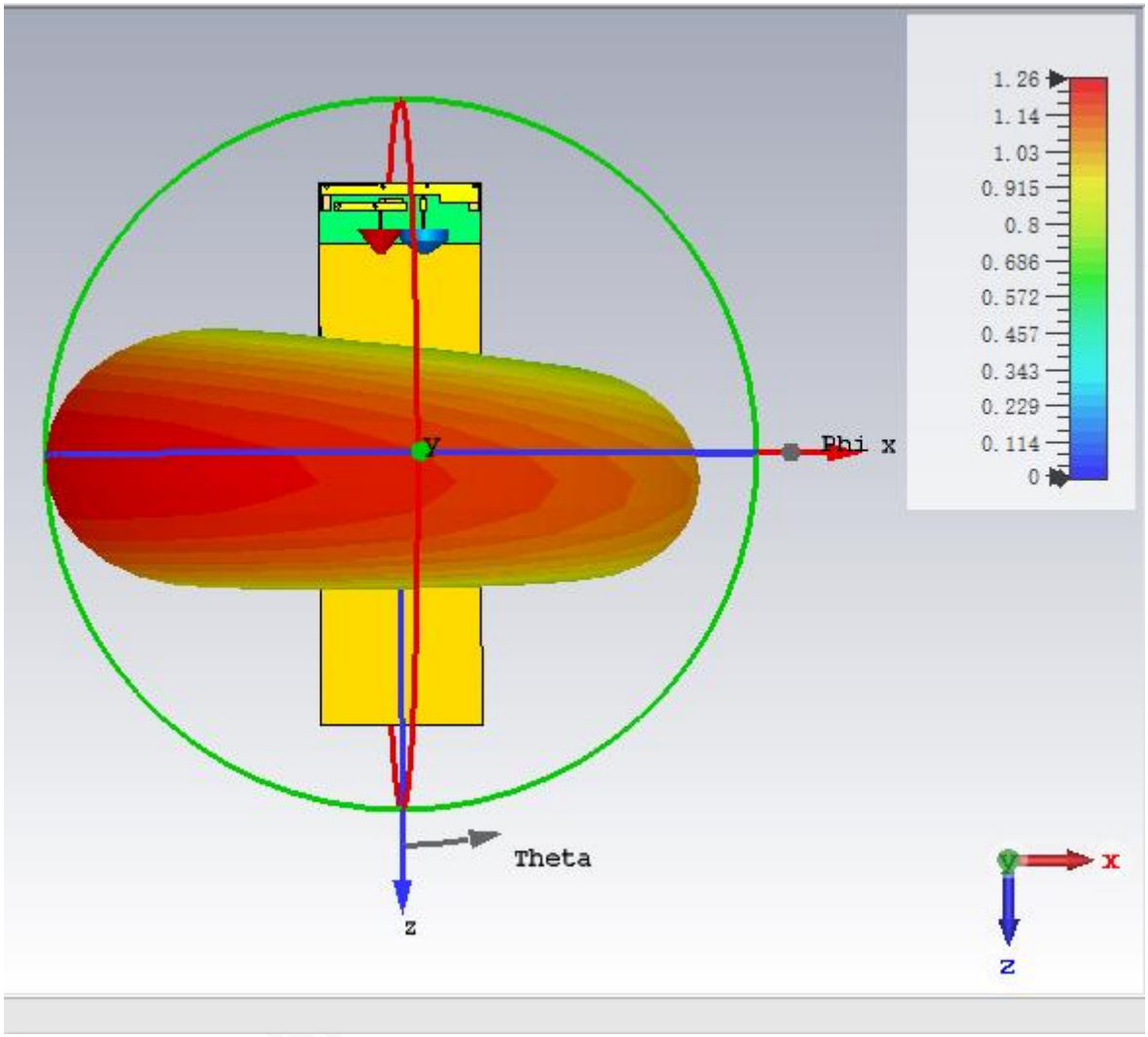
3.3 Radiation Patterns

700MHz



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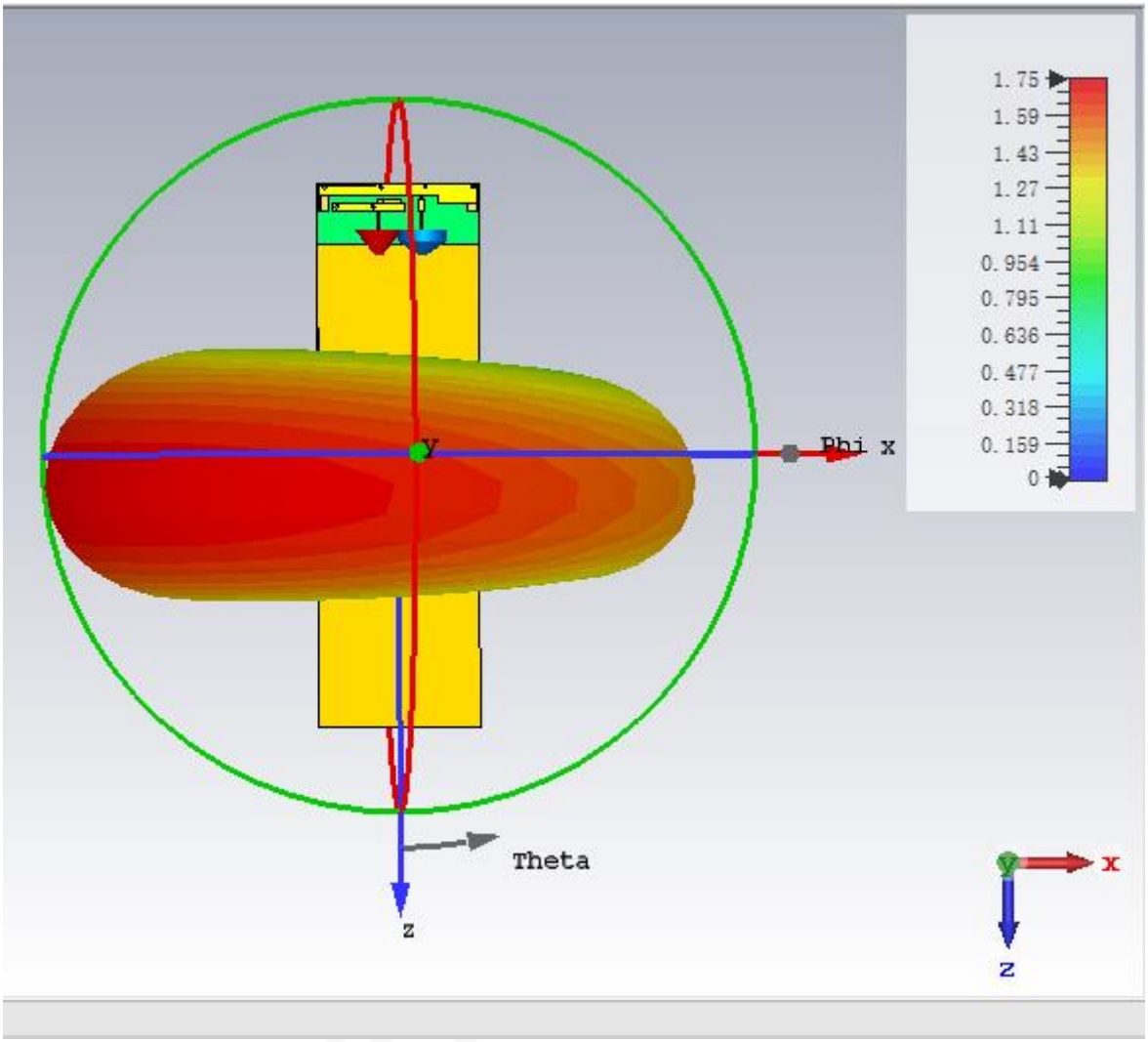
820MHz



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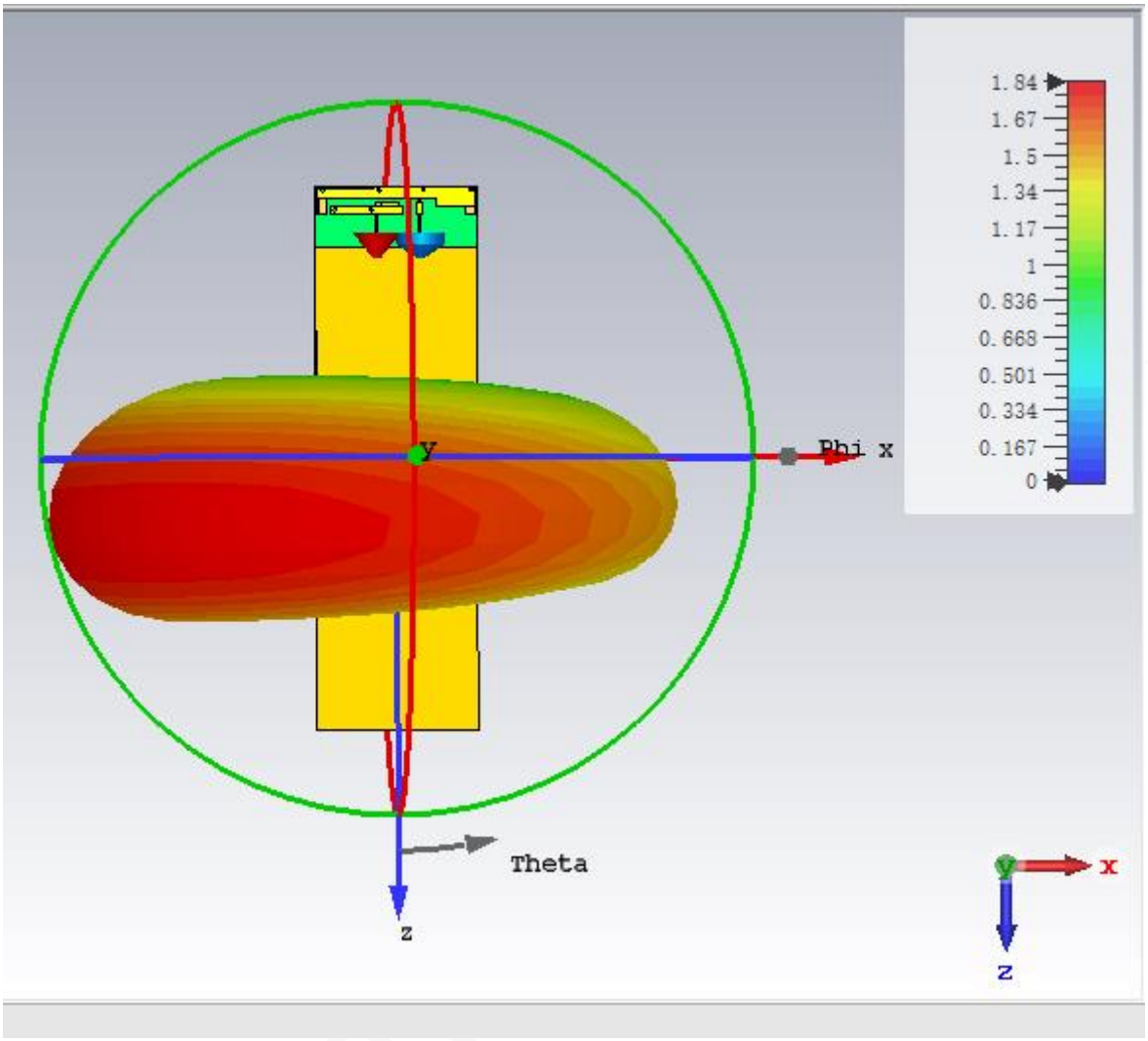
960MHz



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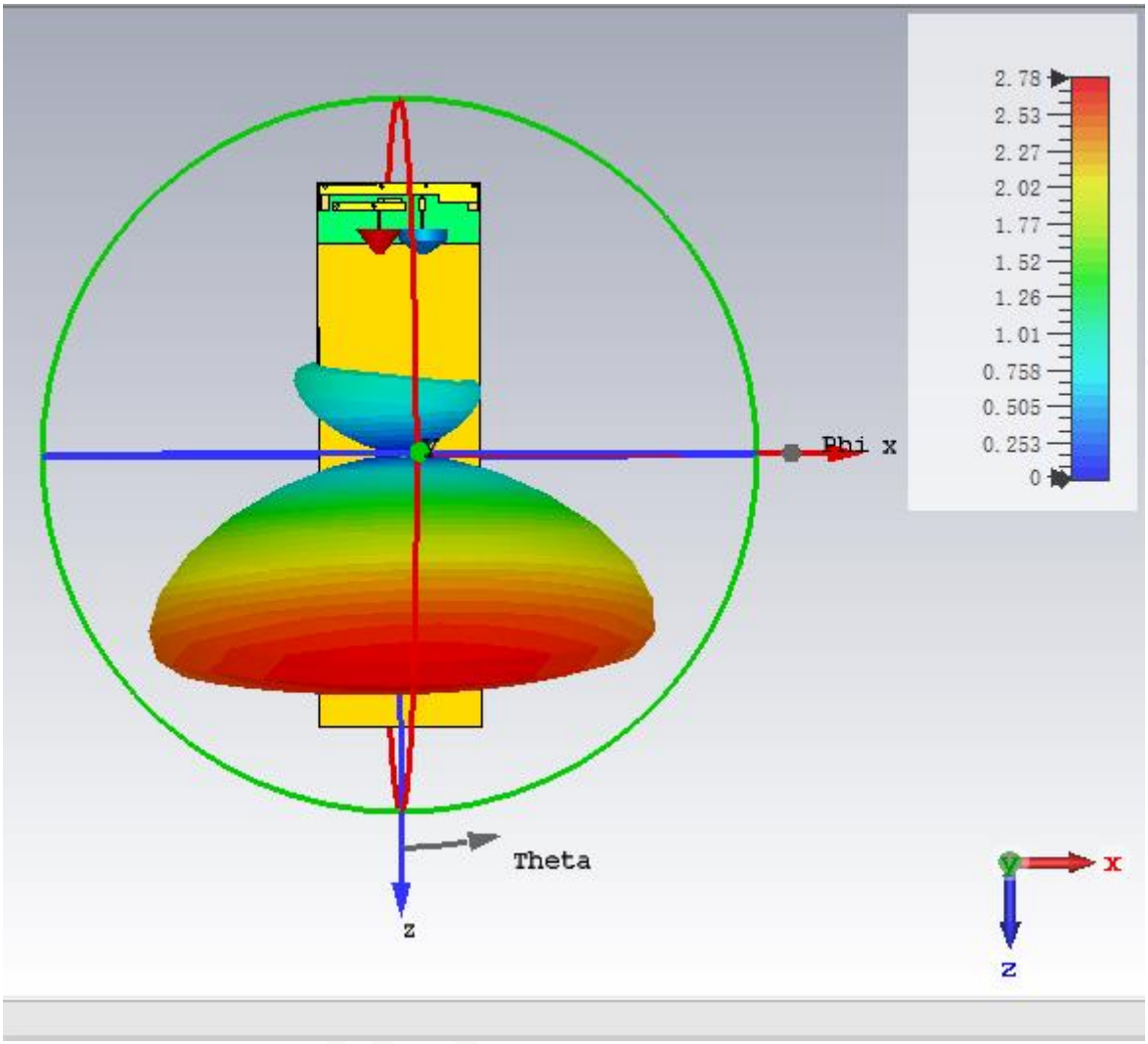
1710MHz



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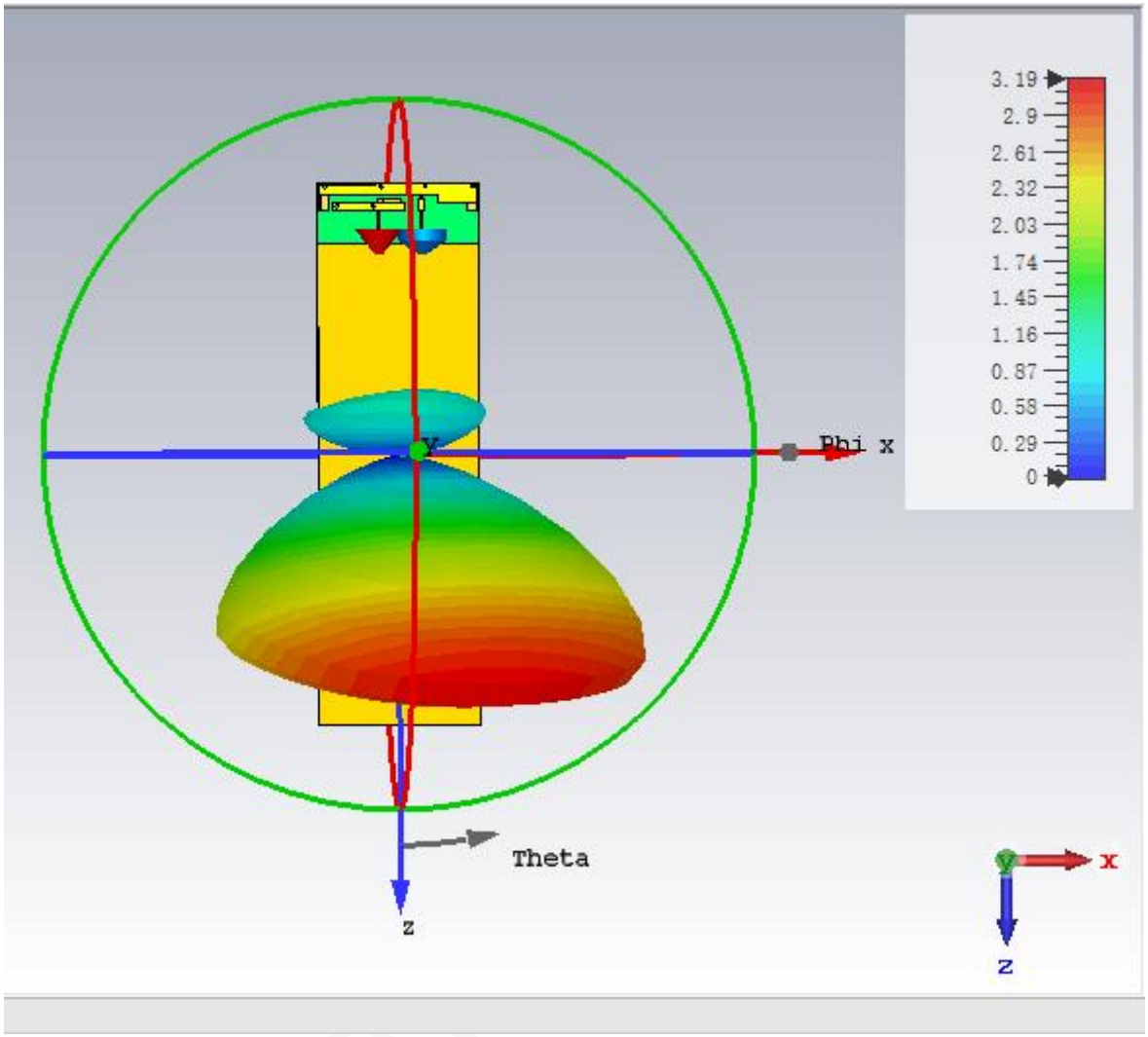
2170MHz



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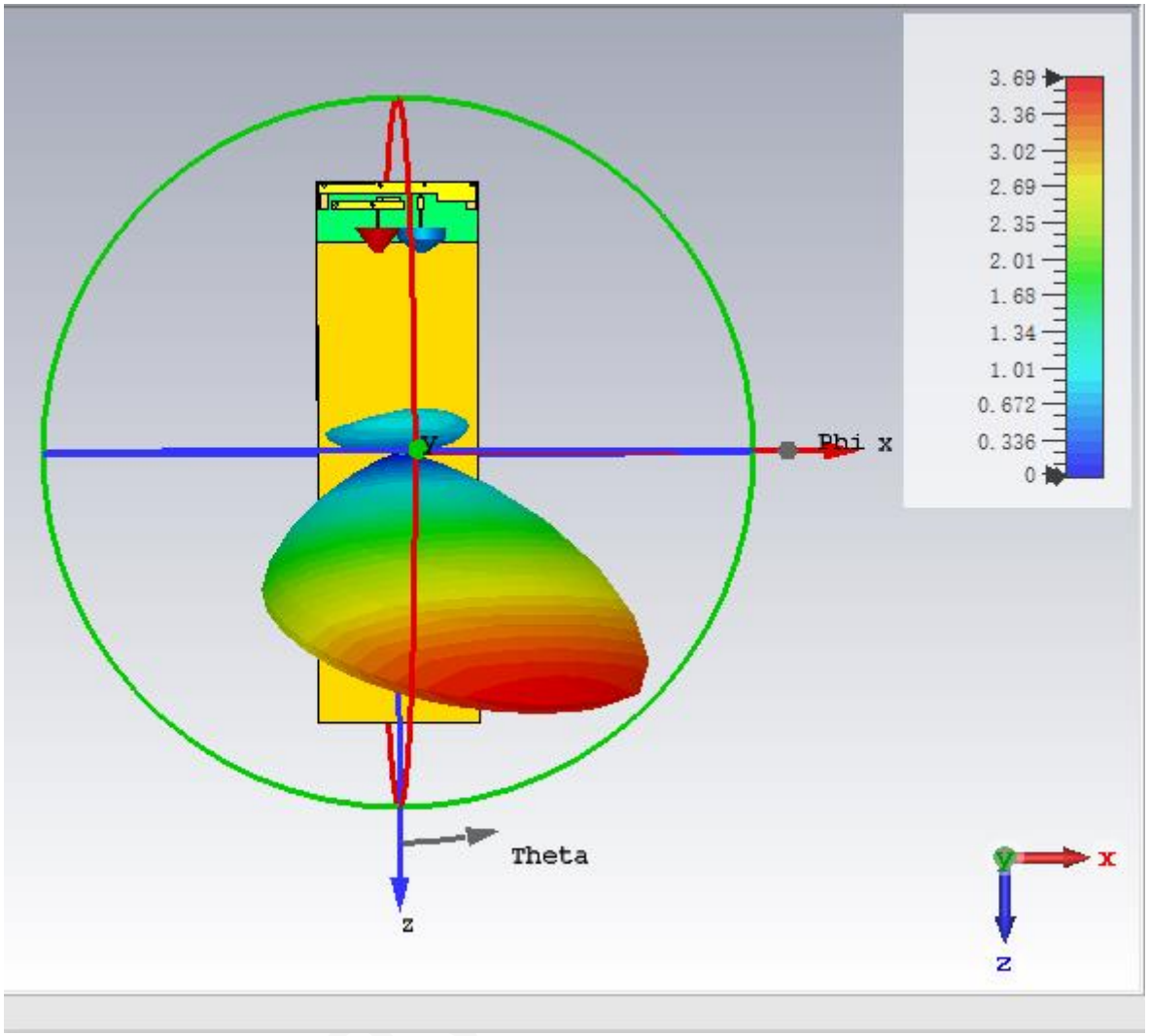
2300MHz



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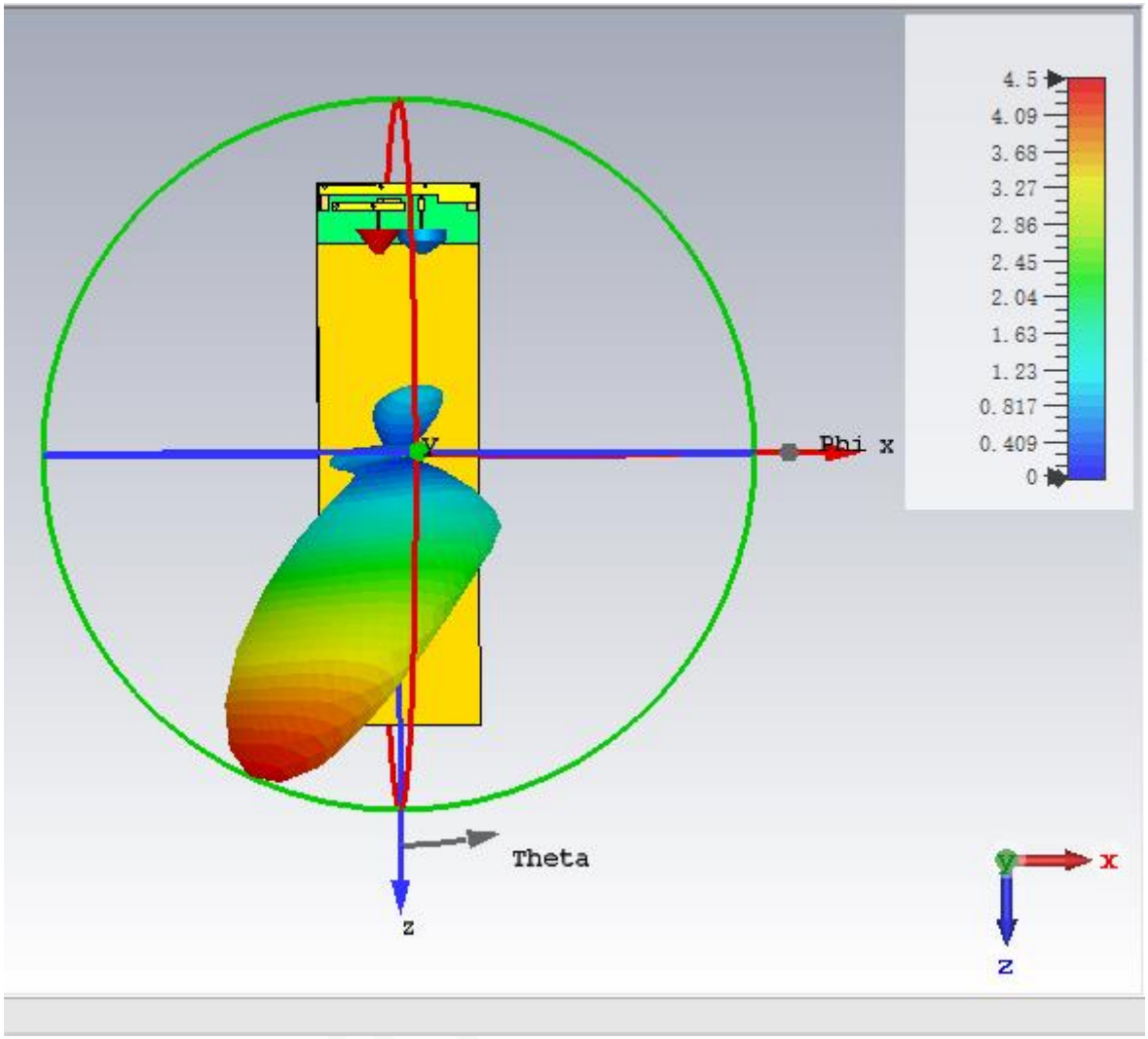
2690MHz



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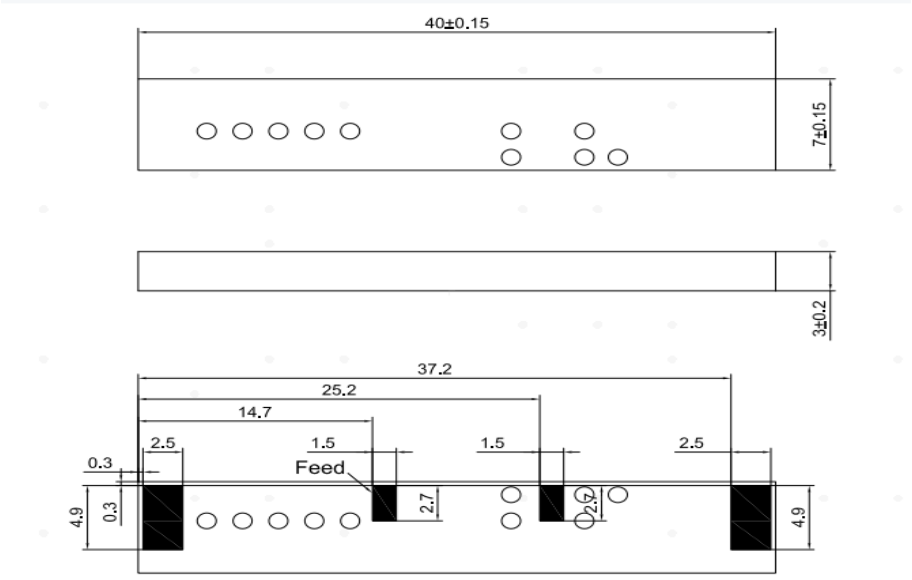
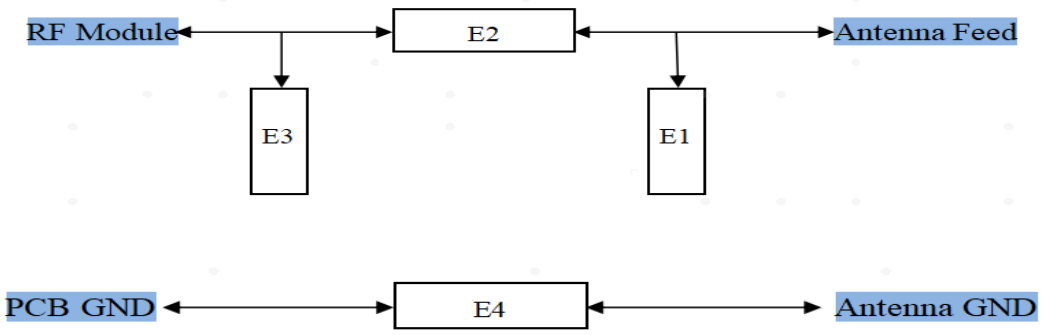
4 Structure



Antenna instructions:

- The antenna clearance requirement: ≥15mm; PCB main board requirement: ≥135mm (L) x 40mm (W).
- Antenna matching requirements: **Antenna Feed** needs to use Π-type matching; **Antenna GND** connects to ground in parallel.

  As shown in the following figure:



- Keep the antenna far away from metal devices with a minimum distance of 10 mm.

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