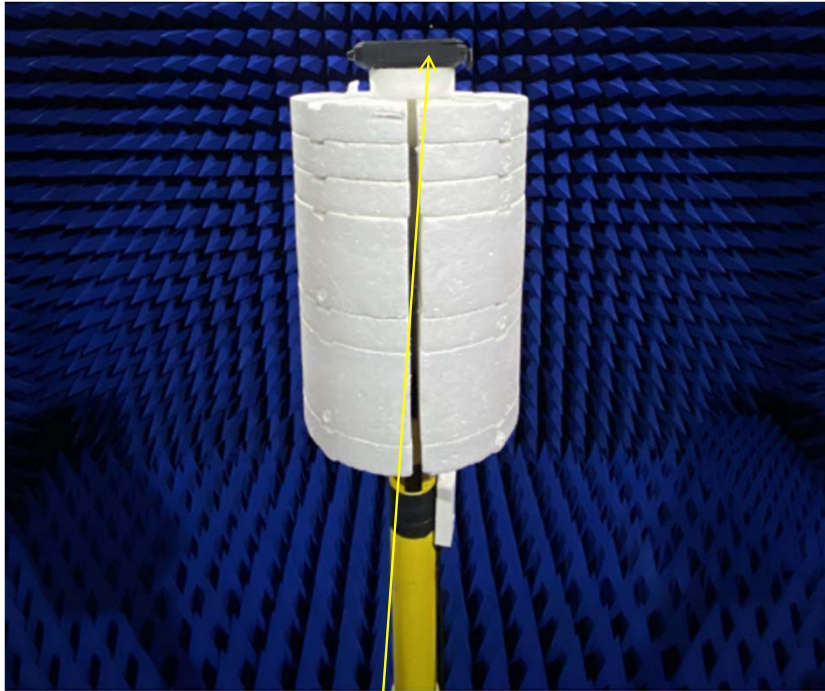


Antenna Study

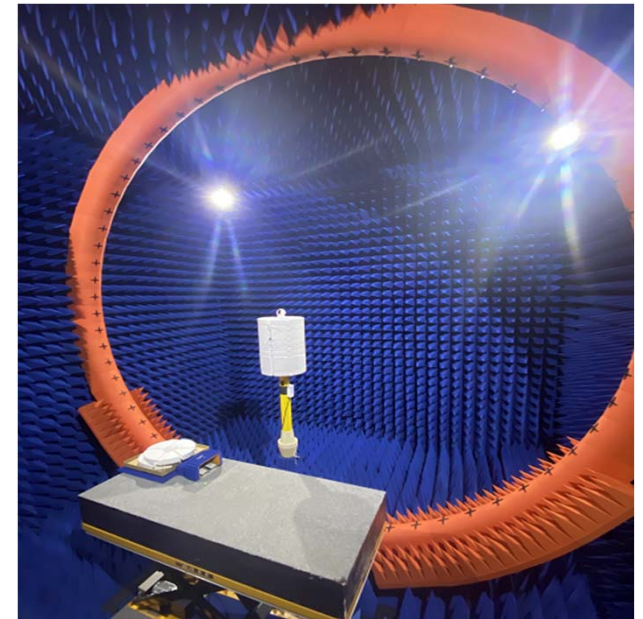
- **Client Name:**The Gem Group, Inc.
- **Project Name:**SOUNDPRO WATERPROOF MAGNETIC SPEAKER-BLACK
- **Debugging frequency band:** 2400-2500MHz
- **Valuation date:** 2023.03.17

Internal Antenna

Dongguan UB Electronics Co., Ltd



Testing environment



Testing 3D microwave darkroom(6m*6m*6m)

External Antenna

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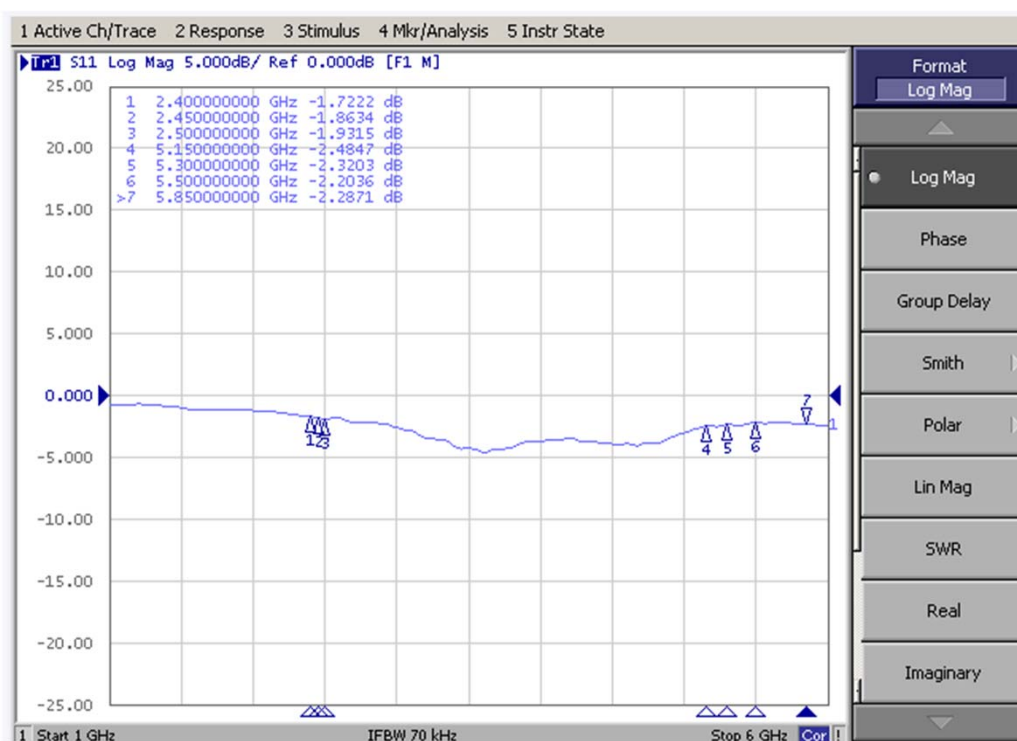
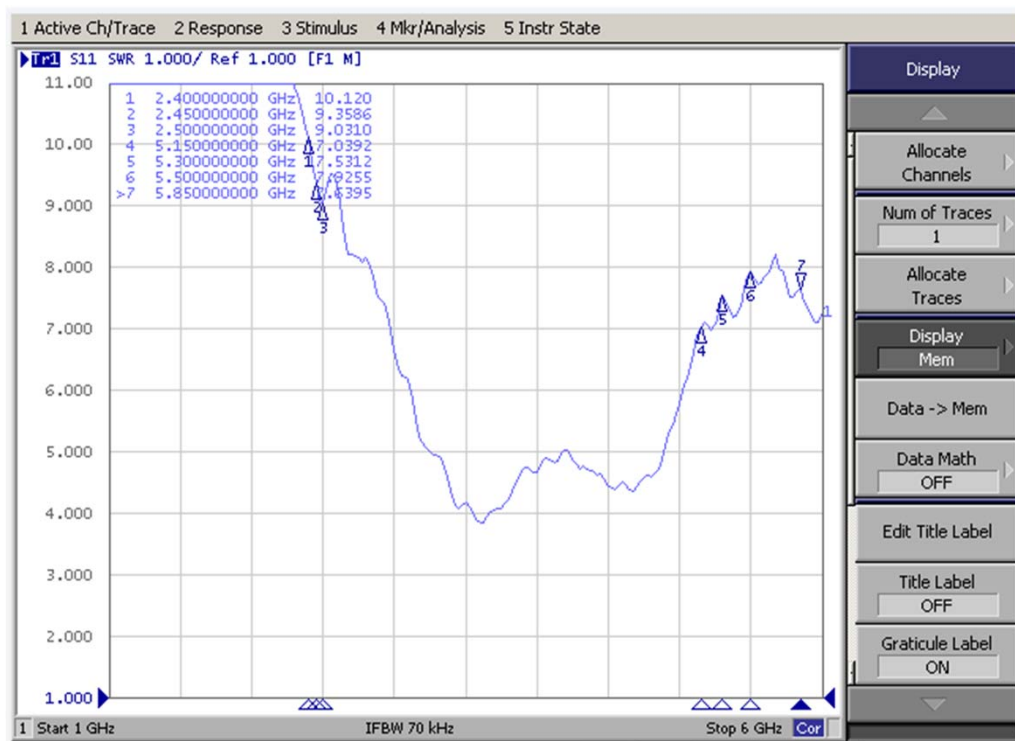


Antenna

- Antenna name: 2.4G
- Antenna Type: Monopole
- Covers : 2400-2500MHz

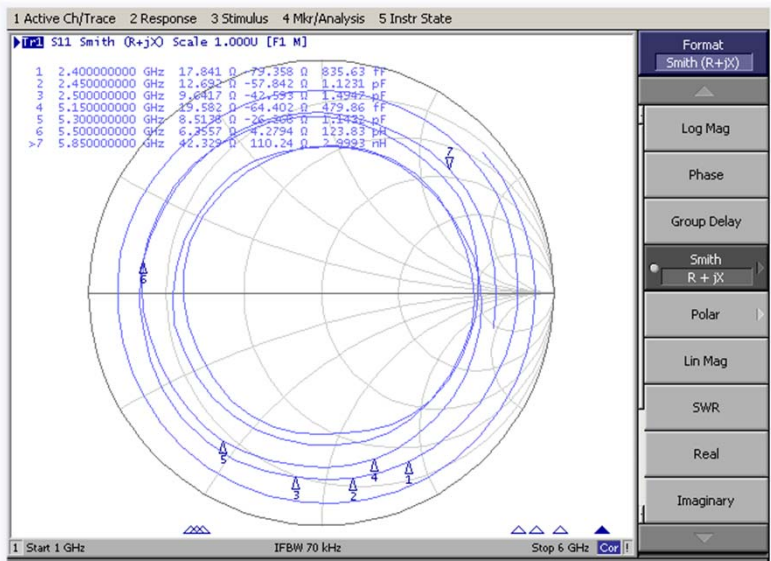
S Parameter_Return Loss&VSWR

Dongguan UB Electronics Co., Ltd



Efficiency and Gain-Smith

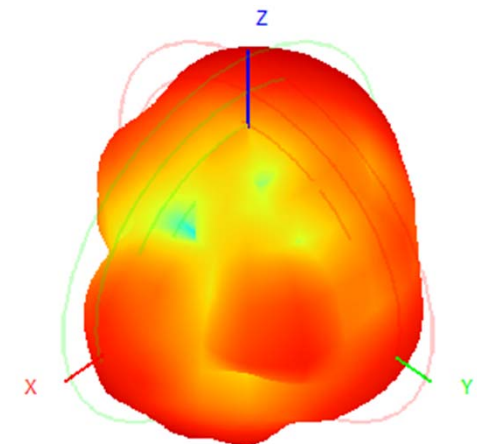
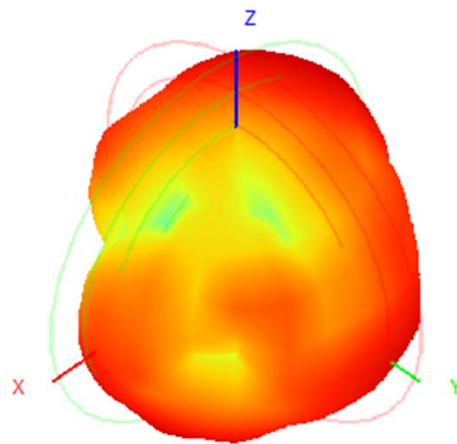
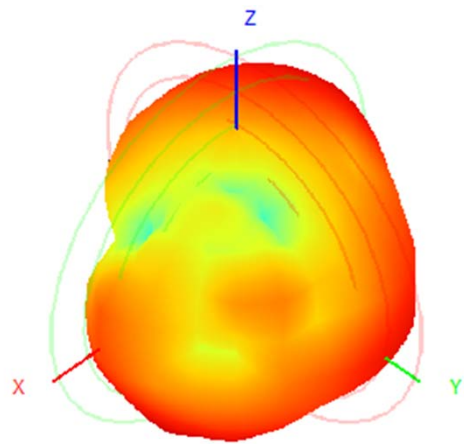
Dongguan UB Electronics Co., Ltd

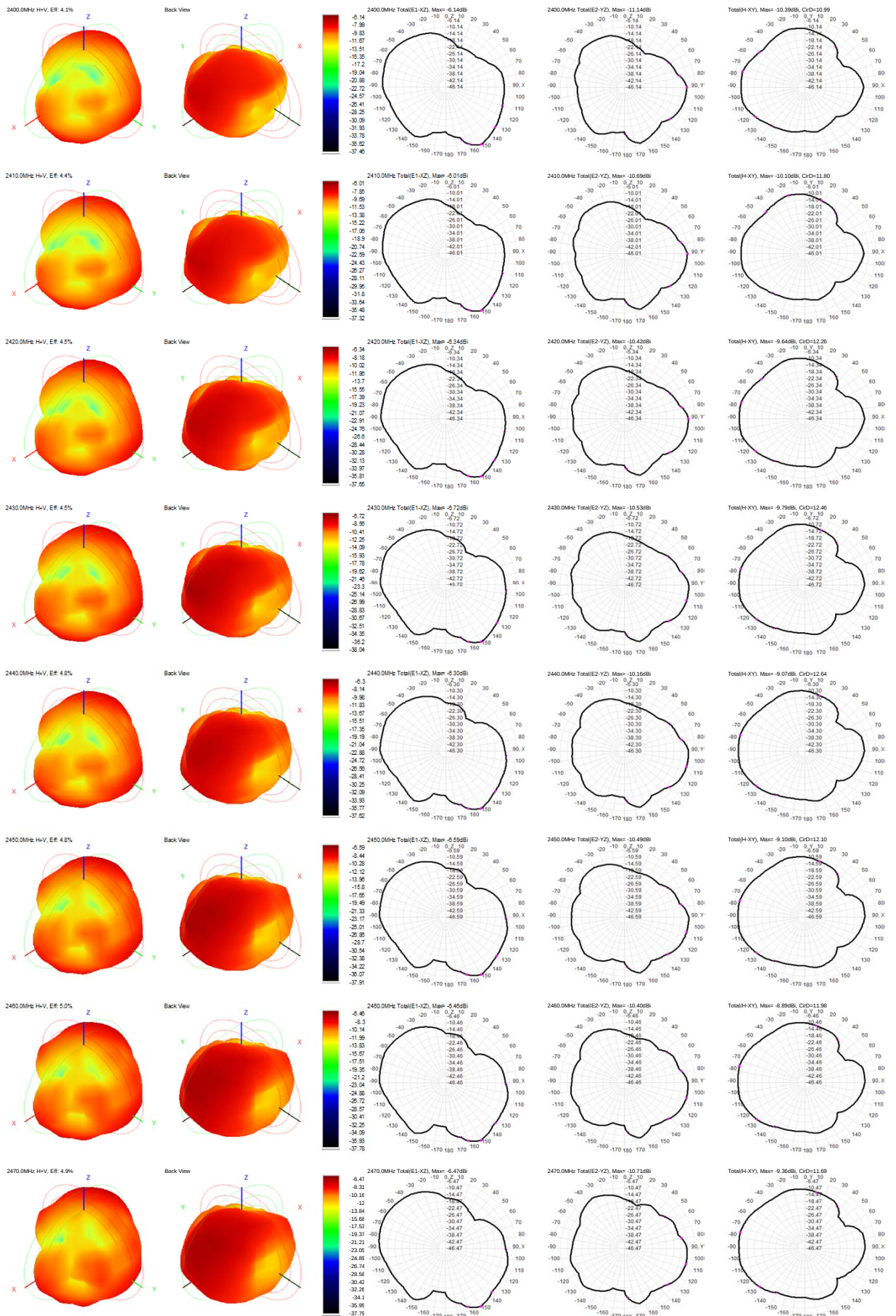


Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Gain (dBi)	-6.14	-6.01	-6.34	-6.72	-6.30	-6.59	-6.46	-6.47	-6.28	-6.65	-6.45
Efficiency (%)	4.12	4.35	4.45	4.45	4.77	4.82	5.03	4.94	5.48	5.06	5.29

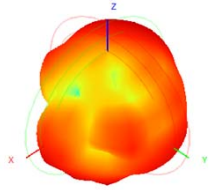
Freespace Environment Performance – WIFI

Dongguan UB Electronics Co., Ltd

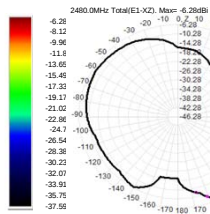
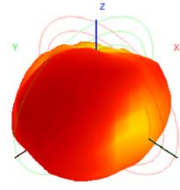




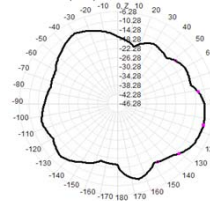
2480.0MHz H+V, Eff: 5.5%



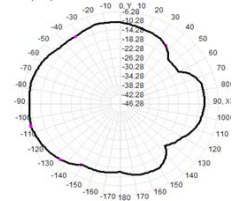
Back View



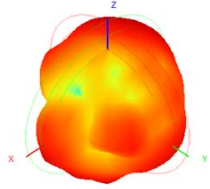
2480.0MHz Total(E2-YZ), Max=-10.08dBi



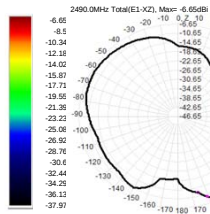
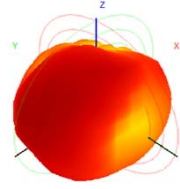
Total(H+V), Max=-8.98dBi, CrD=11.66



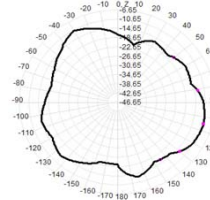
2490.0MHz H+V, Eff: 5.1%



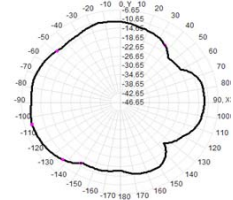
Back View



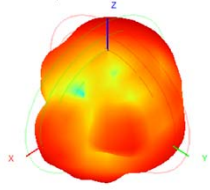
2490.0MHz Total(E2-YZ), Max=-10.43dBi



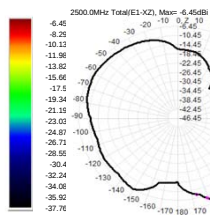
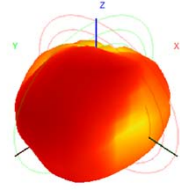
Total(H+V), Max=-9.72dBi, CrD=12.00



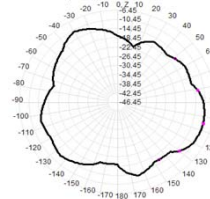
2500.0MHz H+V, Eff: 5.2%



Back View



2500.0MHz Total(E2-YZ), Max=-10.33dBi



Total(H+V), Max=-9.78dBi, CrD=12.31

