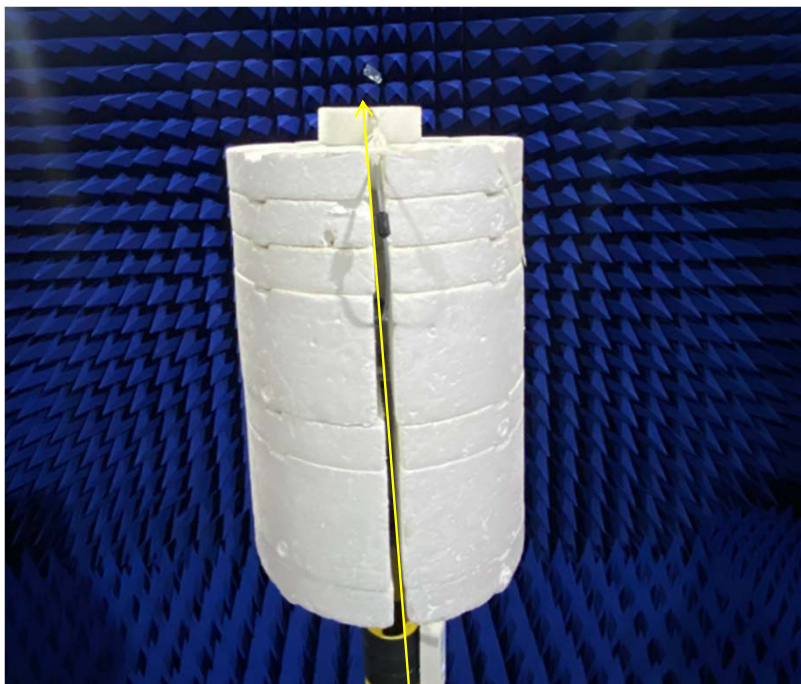


## Antenna Study

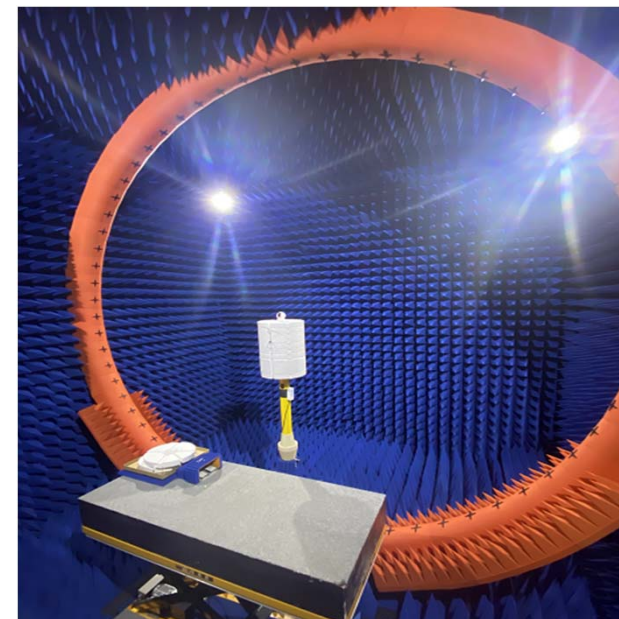
- **Client Name: Shenzhen Luomandi Electronic Technology Co., Ltd**
- **Project Name : smart watch**
- **Debugging frequency band: 2400-2500HMz**
- **Valuation date: 2023.08.12**

# Internal Antenna

Dongguan UB Electronics Co., Ltd



Testing environment



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

# External Antenna

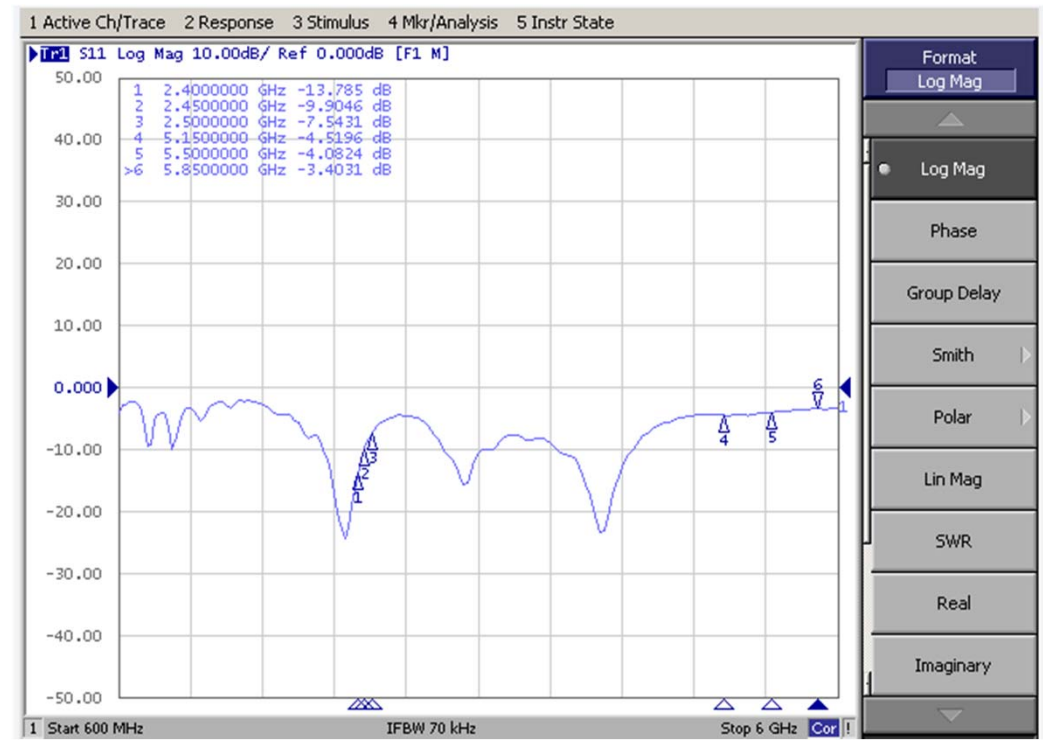
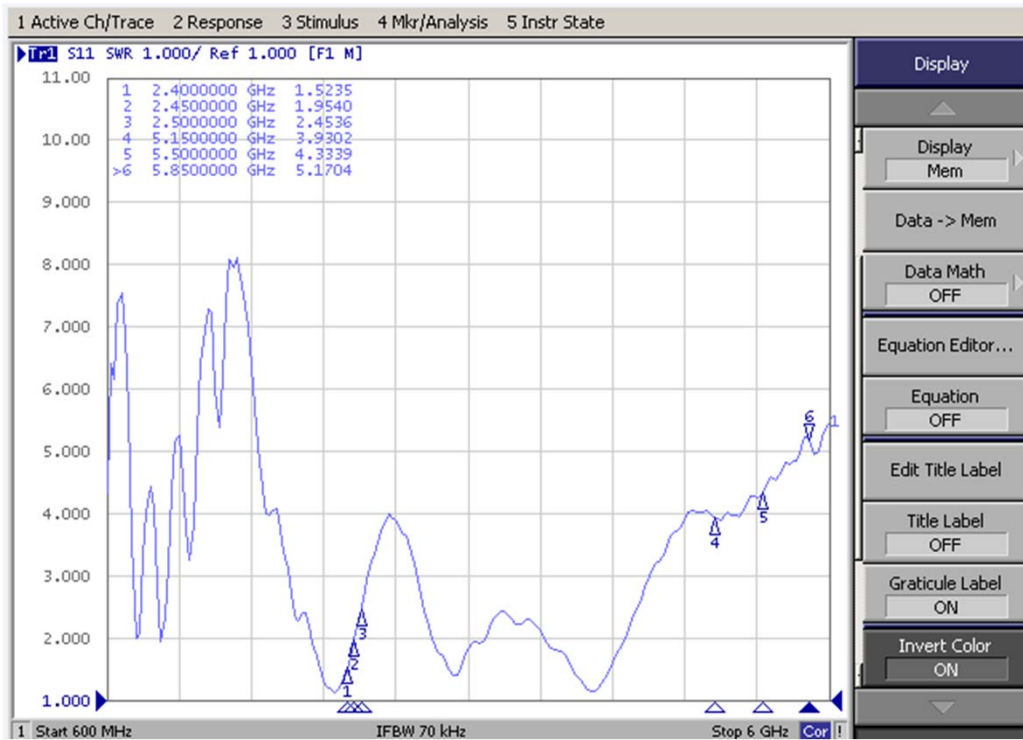
Dongguan UB Electronics Co., Ltd



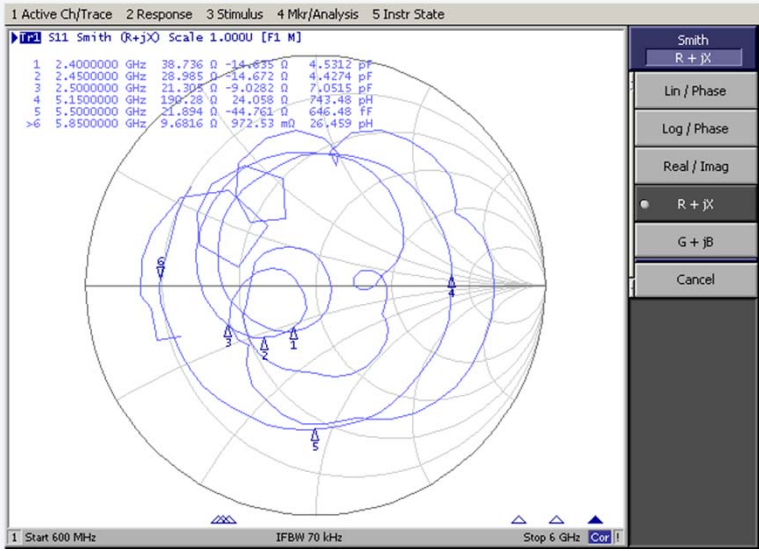
- Antenna name: 2.4G
- Antenna Type: Monopole
- Covers : 2.4G

Antenna

# S Parameter\_Return Loss&VSWR

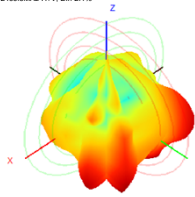


# Efficiency and Gain-Smith

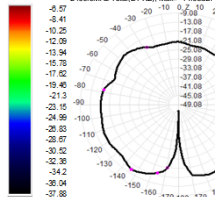
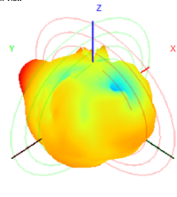


Frequency ID	1	2	3	4	5	6	7	8	9	10	11
Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
Gain (dBi)	-6.57	-6.60	-6.82	-7.08	-7.32	-7.40	-7.48	-7.50	-7.82	-8.34	-8.43
Efficiency (%)	2.12	2.05	2.01	1.99	1.99	2.03	1.97	1.88	1.72	1.48	1.41

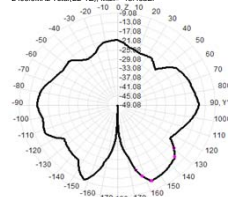
2400.0MHz H+V, E# 2.1%



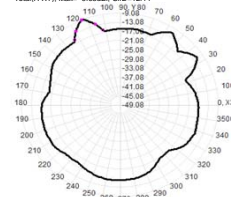
Back View



2400.0MHz Total(E+XZ), Max=-14.93dB



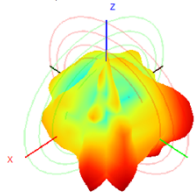
Total(E+YZ), Max=-13.46dB



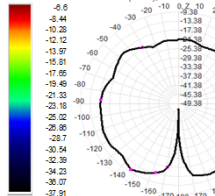
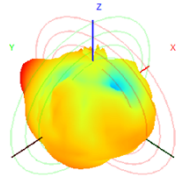
Total(H+XY), Max=-9.08dB, CrD=12.14



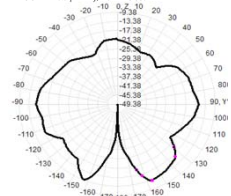
2410.0MHz H+V, E# 2.1%



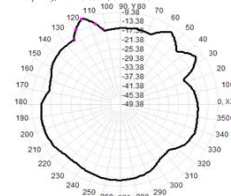
Back View



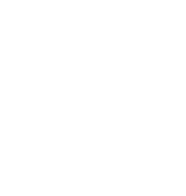
2410.0MHz Total(E+XZ), Max=-14.79dB



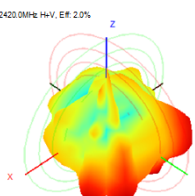
Total(E+YZ), Max=-13.38dB



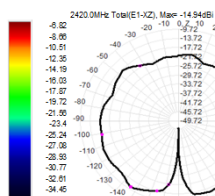
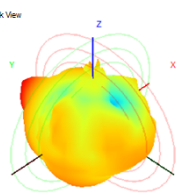
Total(H+XY), Max=-9.38dB, CrD=12.30



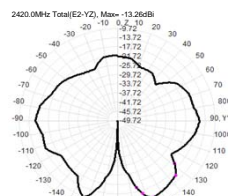
2420.0MHz H+V, E# 2.0%



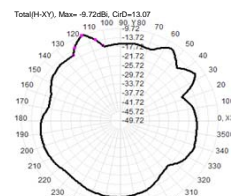
Back View



2420.0MHz Total(E+XZ), Max=-14.94dB



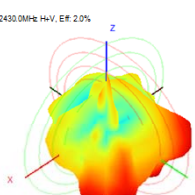
Total(E+YZ), Max=-13.26dB



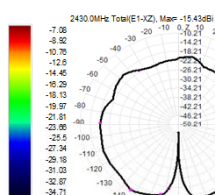
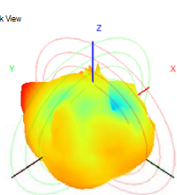
Total(H+XY), Max=-9.72dB, CrD=13.07



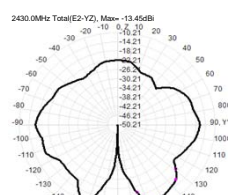
2430.0MHz H+V, E# 2.0%



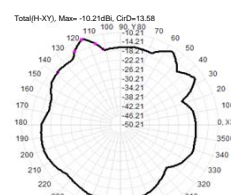
Back View



2430.0MHz Total(E+XZ), Max=-15.43dB



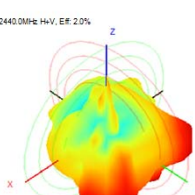
Total(E+YZ), Max=-13.45dB



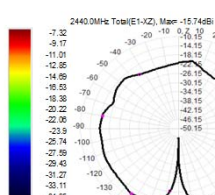
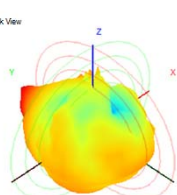
Total(H+XY), Max=-9.16dB, CrD=13.58



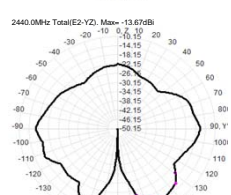
2440.0MHz H+V, E# 2.0%



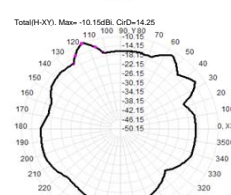
Back View



2440.0MHz Total(E+XZ), Max=-15.74dB



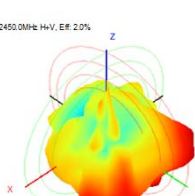
Total(E+YZ), Max=-13.67dB



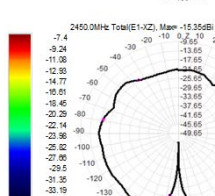
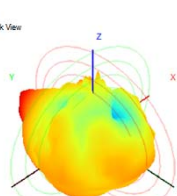
Total(H+XY), Max=-10.16dB, CrD=14.25



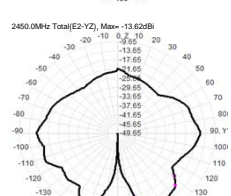
2450.0MHz H+V, E# 2.0%



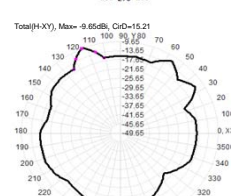
Back View



2450.0MHz Total(E+XZ), Max=-15.35dB



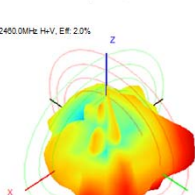
Total(E+YZ), Max=-13.62dB



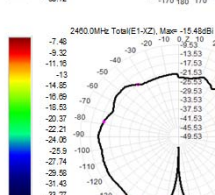
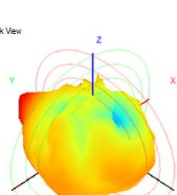
Total(H+XY), Max=-9.65dB, CrD=15.21



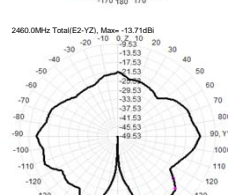
2460.0MHz H+V, E# 2.0%



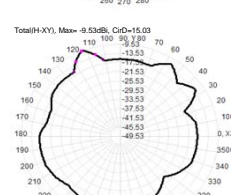
Back View



2460.0MHz Total(E+XZ), Max=-15.45dB



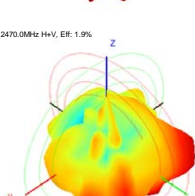
Total(E+YZ), Max=-13.71dB



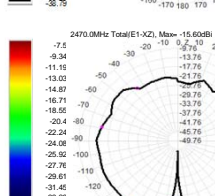
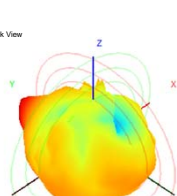
Total(H+XY), Max=-9.53dB, CrD=15.53



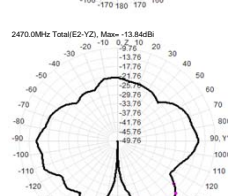
2470.0MHz H+V, E# 1.9%



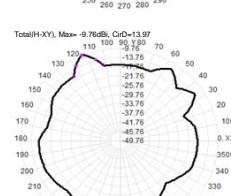
Back View



2470.0MHz Total(E+XZ), Max=-15.00dB



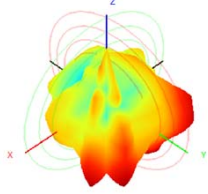
Total(E+YZ), Max=-13.84dB



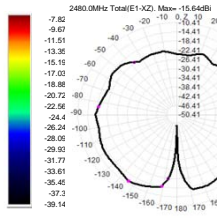
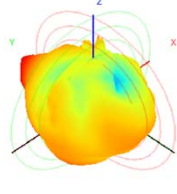
Total(H+XY), Max=-9.78dB, CrD=13.97



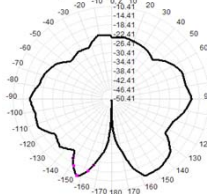
2480.0MHz H+V, Eff: 1.7%



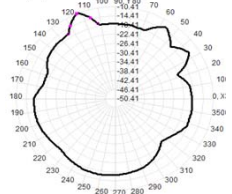
Back View



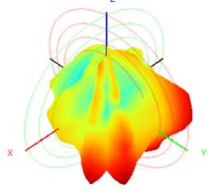
2480.0MHz Total(E2-YZ), Max=-14.21dB



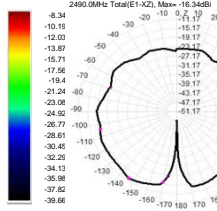
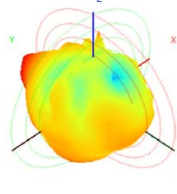
Total(H+XY), Max=-10.41dB, CirD=13.67



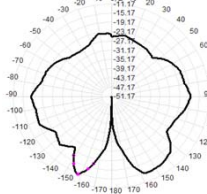
2490.0MHz H+V, Eff: 1.5%



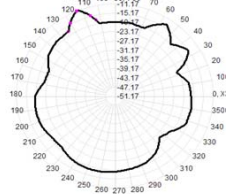
Back View



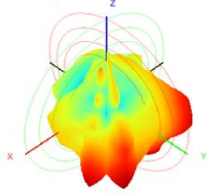
2490.0MHz Total(E2-YZ), Max=-14.52dB



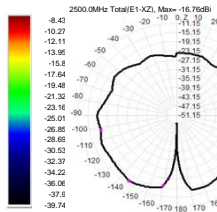
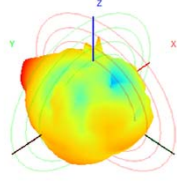
Total(H+XY), Max=-11.17dB, CirD=14.83



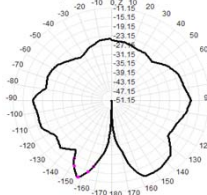
2500.0MHz H+V, Eff: 1.4%



Back View



2500.0MHz Total(E2-YZ), Max=-15.22dB



Total(H+XY), Max=-11.15dB, CirD=15.38

