



深圳云里物里科技股份有限公司
产品天线测试报告 (The Antenna Test Report)

Y-YB-CR-115

V001

密级: 绝密 /confidentiality

Antenna Coding: ANT-BPNCNC20005

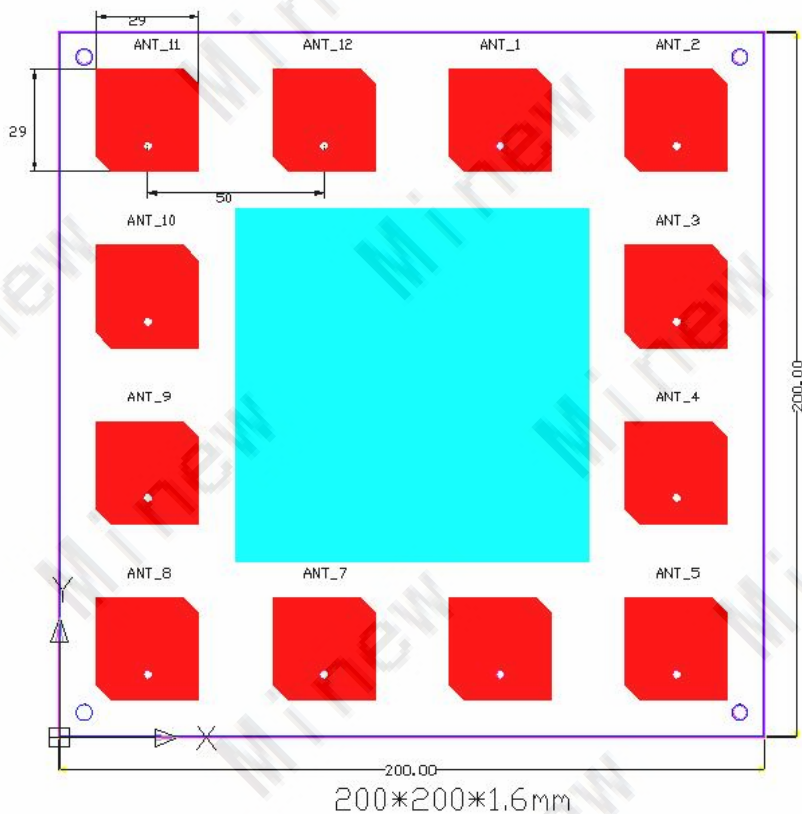
Antenna Type: PCB Onboard Antenna, Patch Antenna

Antenna Manufacturer: Shenzhen Minew Technologies Co., Ltd.

1、Technical Specification

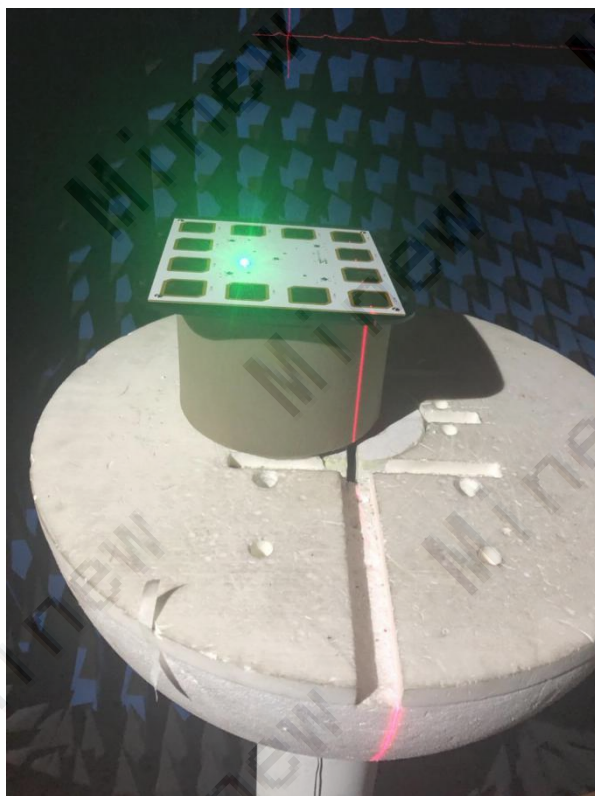
Electrical Specifications	
Frequency Range (MHz)	2402-2480
Input Impedance (Ω)	50
Return Loss (dB)	<-7
VSWR	<3
Peak Gain (dBi)	ANT1: -4.89 ANT2: -4.54 ANT3: -3.65 ANT4: -3.48 ANT5: -2.69 ANT6: -2.78 ANT7: -2.89 ANT8: -3.53 ANT9: -2.62 ANT10: -3.49 ANT11: -3.63 ANT12: -3.36
Polarization Type	circularly polarized antenna
Mechanical Specifications	
Antenna Size (mm)	29*29
Radiator	Cuprum

2、The shape and size of the antenna



3、The result of the test

3.1 Test Environment



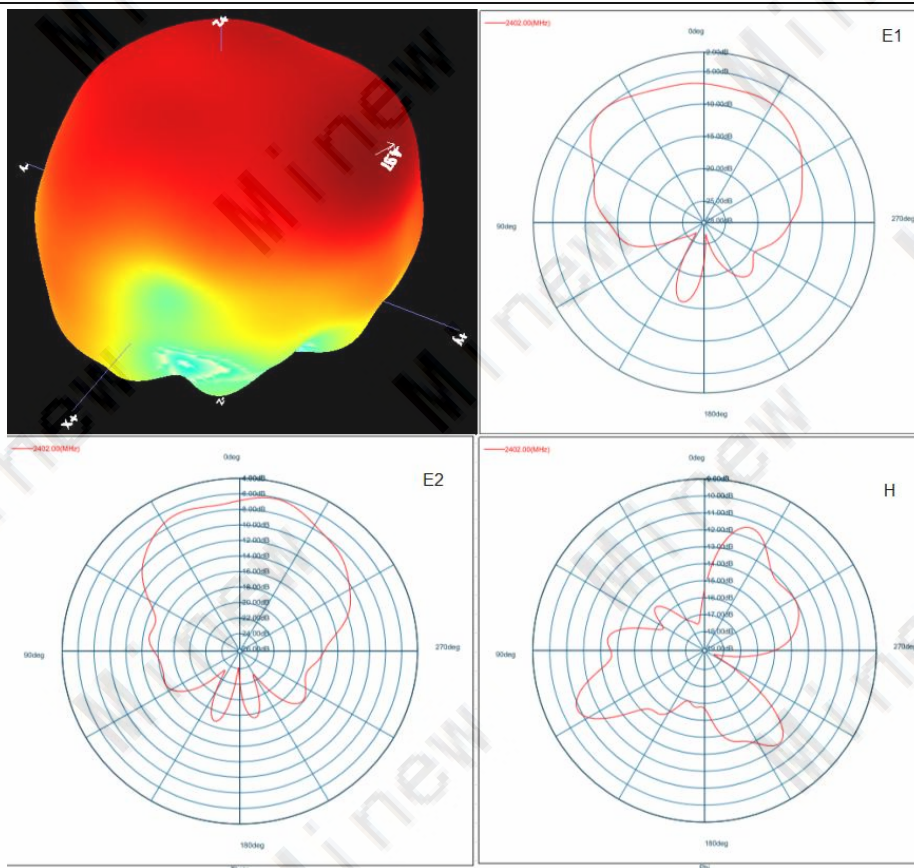
3.2 ANT 1

3.2.1 S11

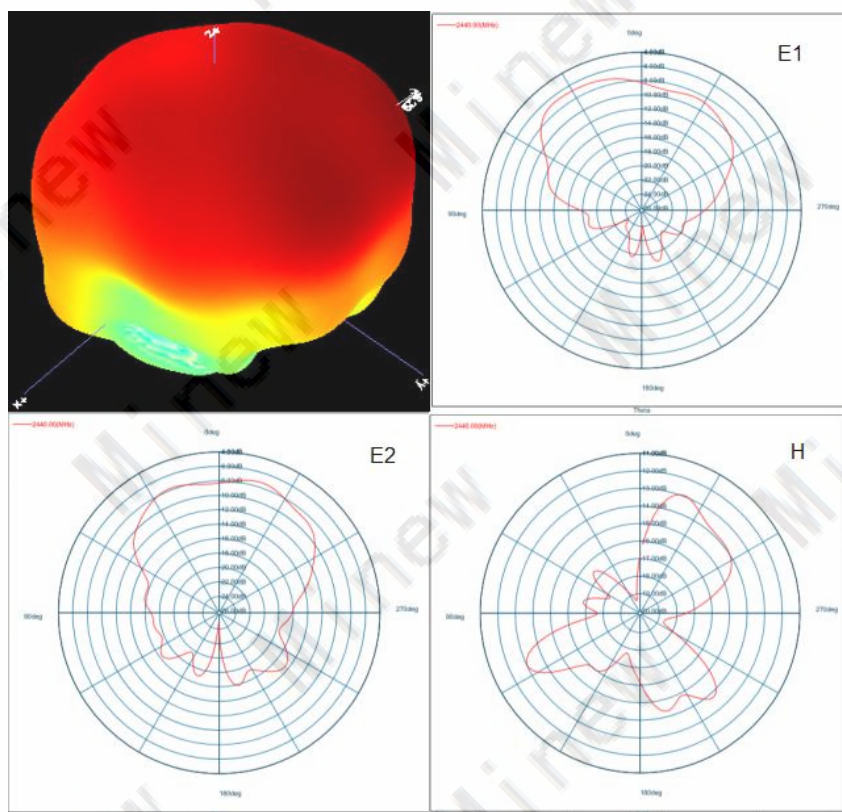


S11

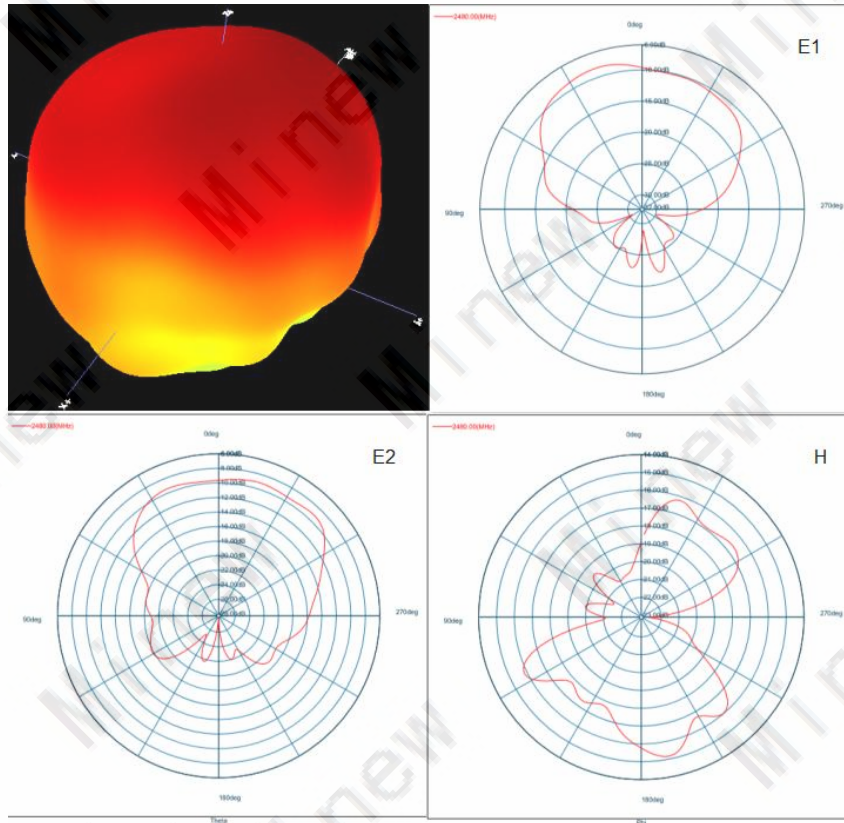
3.2.2 Gain



2402MHz



2440MHz



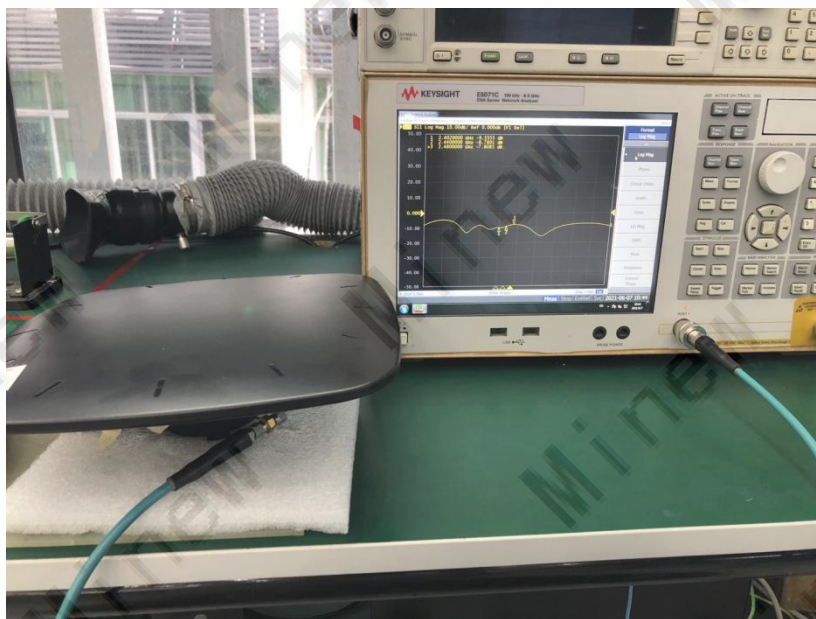
2480MHz

Frequency	Gain . dB	Peak Gain
2400000000	-5.03852	-4.89753965
2402000000	-4.97038	
2404000000	-4.93448	
2406000000	-4.99125	
2408000000	-5.02561	
2410000000	-4.95366	
2412000000	-4.89754	
2414000000	-4.91511	
2416000000	-5.01849	
2418000000	-5.06394	
2420000000	-5.06754	
2422000000	-5.08699	
2424000000	-5.2331	
2426000000	-5.336	
2428000000	-5.40204	
2430000000	-5.39744	
2432000000	-5.38112	
2434000000	-5.49929	
2436000000	-5.67096	
2438000000	-5.81185	
2440000000	-5.95439	
2442000000	-6.11043	
2444000000	-6.16318	
2446000000	-6.36857	
2448000000	-6.62206	
2450000000	-6.68798	
2452000000	-6.65056	
2454000000	-6.69699	
2456000000	-6.90359	
2458000000	-7.13954	
2460000000	-7.19356	
2462000000	-7.12768	
2464000000	-7.17381	
2466000000	-7.29338	
2468000000	-7.4502	
2470000000	-7.48652	
2472000000	-7.39935	
2474000000	-7.44741	
2476000000	-7.62883	
2478000000	-7.80383	
2480000000	-7.81001	

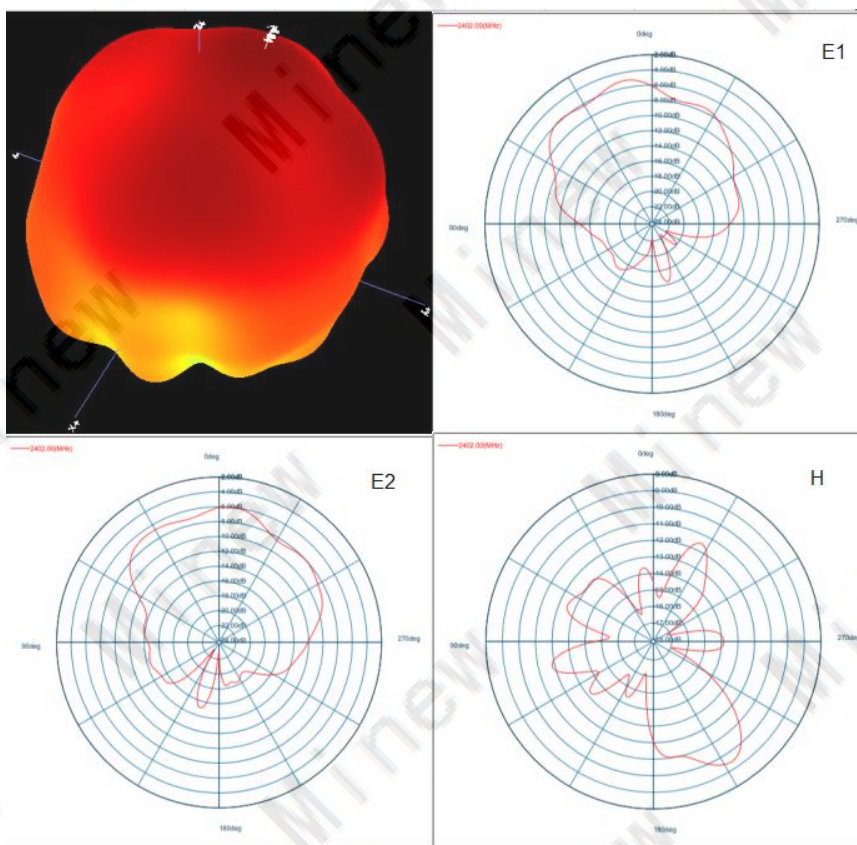
Gain data (Ant1)

3.3 ANT2

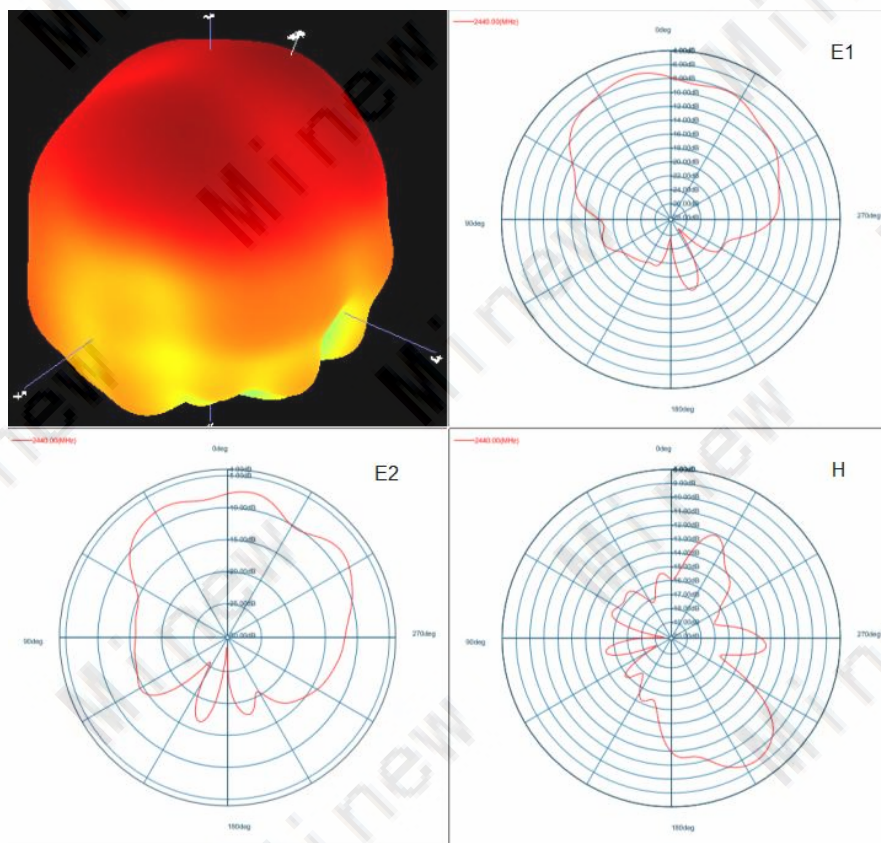
3.3.1 S11



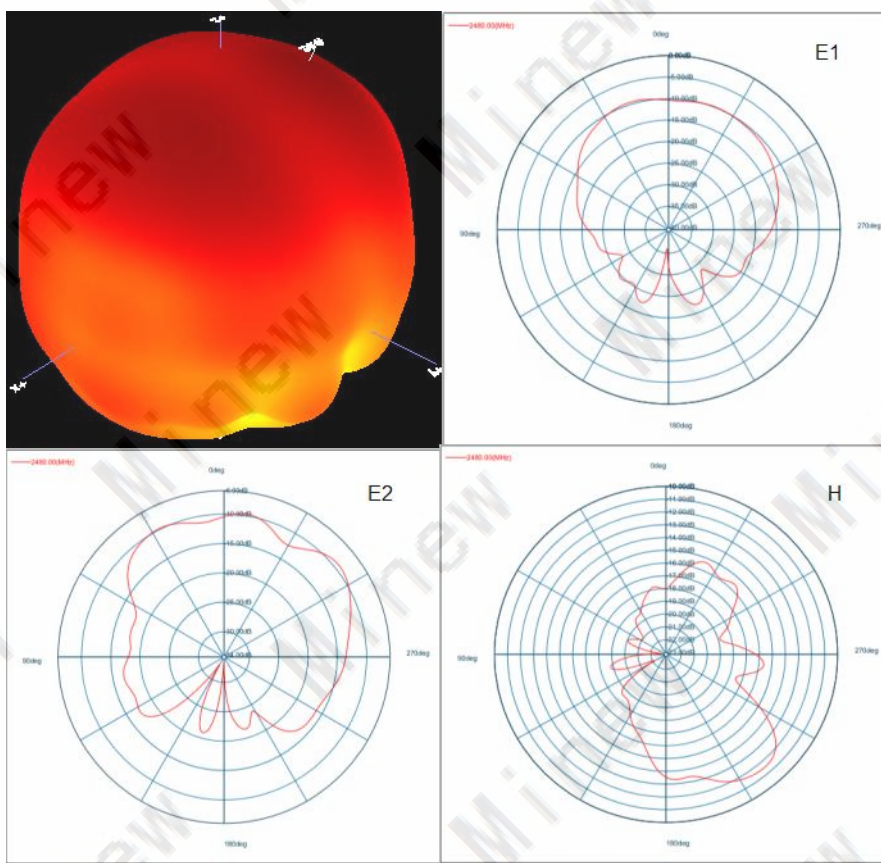
3.3.2 Gain



2402MHz



2440MHz



2480MHz



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产品天线测试报告 (The Antenna Test Report)

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V001

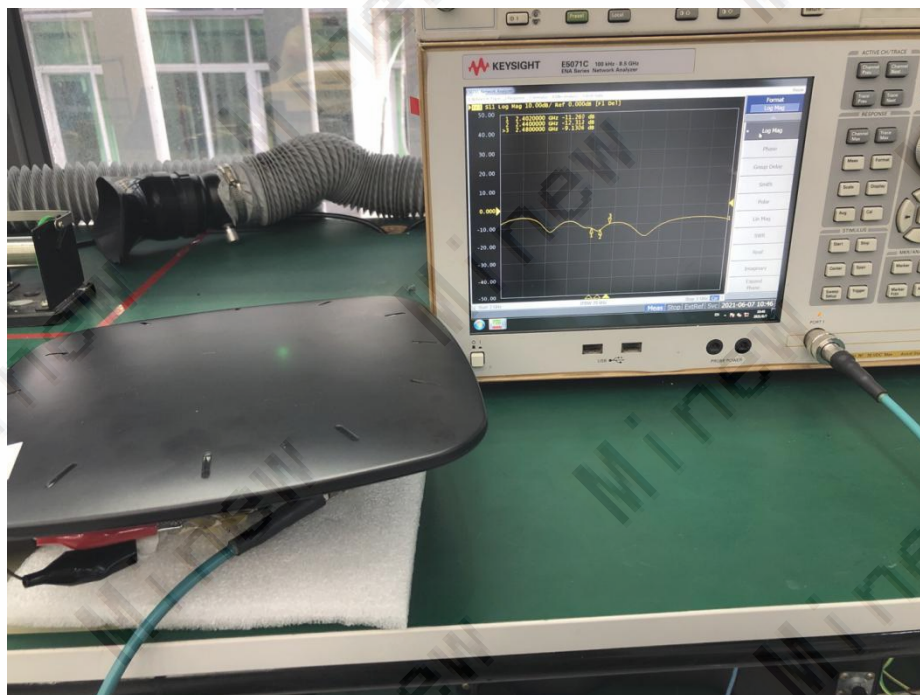
密级: 绝密 /confidentiality

Frequency	Gain , dB	Peak Gain
2400000000	-4.821936329	-4.548006261
2402000000	-4.839304383	
2404000000	-4.606236338	
2406000000	-4.548006261	
2408000000	-4.740759346	
2410000000	-4.917693304	
2412000000	-4.84185253	
2414000000	-4.636533928	
2416000000	-4.657564964	
2418000000	-4.948950103	
2420000000	-5.176736516	
2422000000	-5.147423009	
2424000000	-5.037672148	
2426000000	-5.139172872	
2428000000	-5.386858699	
2430000000	-5.586845963	
2432000000	-5.56685262	
2434000000	-5.514192888	
2436000000	-5.683161238	
2438000000	-5.990941781	
2440000000	-6.212129414	
2442000000	-6.233238561	
2444000000	-6.269473533	
2446000000	-6.497278323	
2448000000	-6.805551807	
2450000000	-6.994799114	
2452000000	-6.987738778	
2454000000	-7.018118374	
2456000000	-7.255990638	
2458000000	-7.570895693	
2460000000	-7.701900062	
2462000000	-7.595216134	
2464000000	-7.594851472	
2466000000	-7.755228259	
2468000000	-7.998167643	
2470000000	-8.101006529	
2472000000	-8.017438848	
2474000000	-8.010380794	
2476000000	-8.194926388	
2478000000	-8.446608803	
2480000000	-8.522905354	

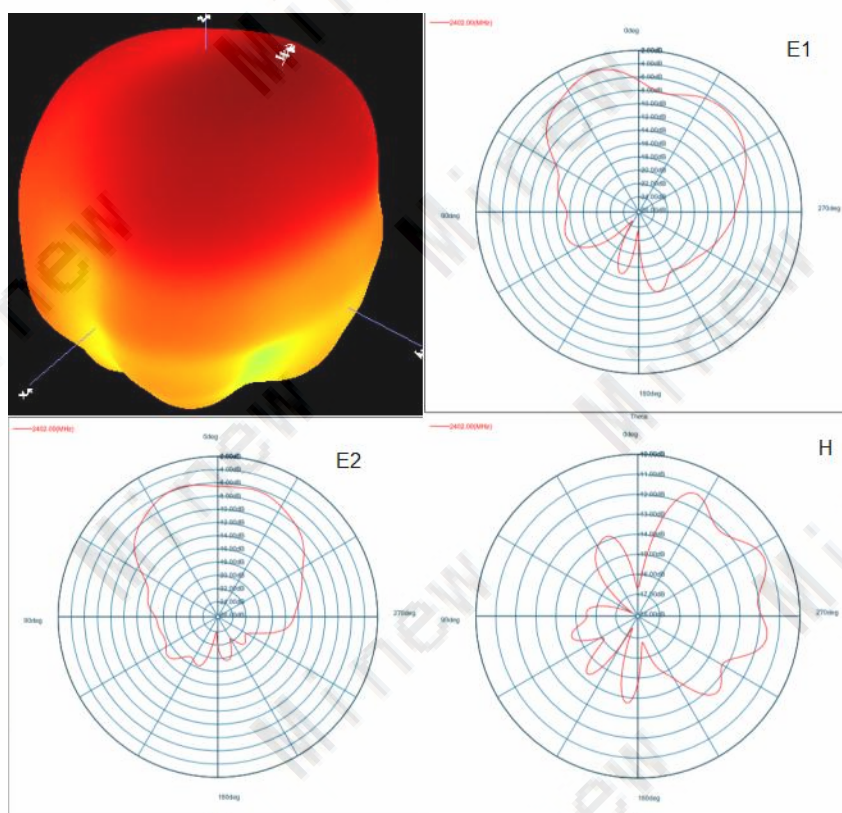
Gain data (Ant2)

3.4 ANT3

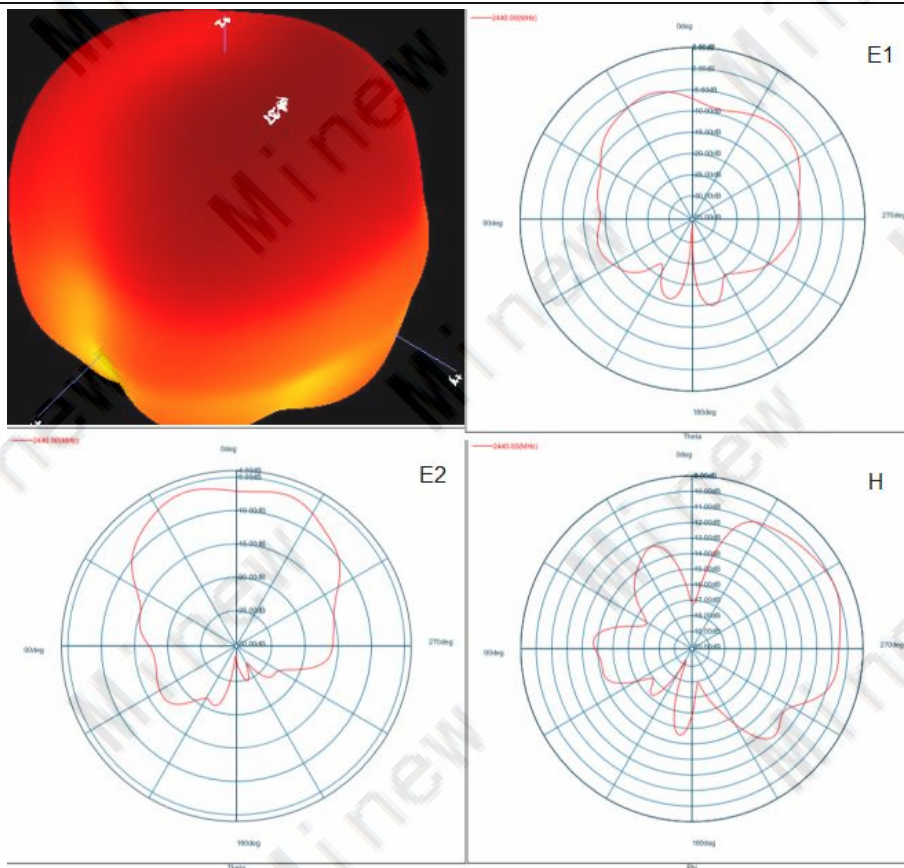
3.4.1 S11



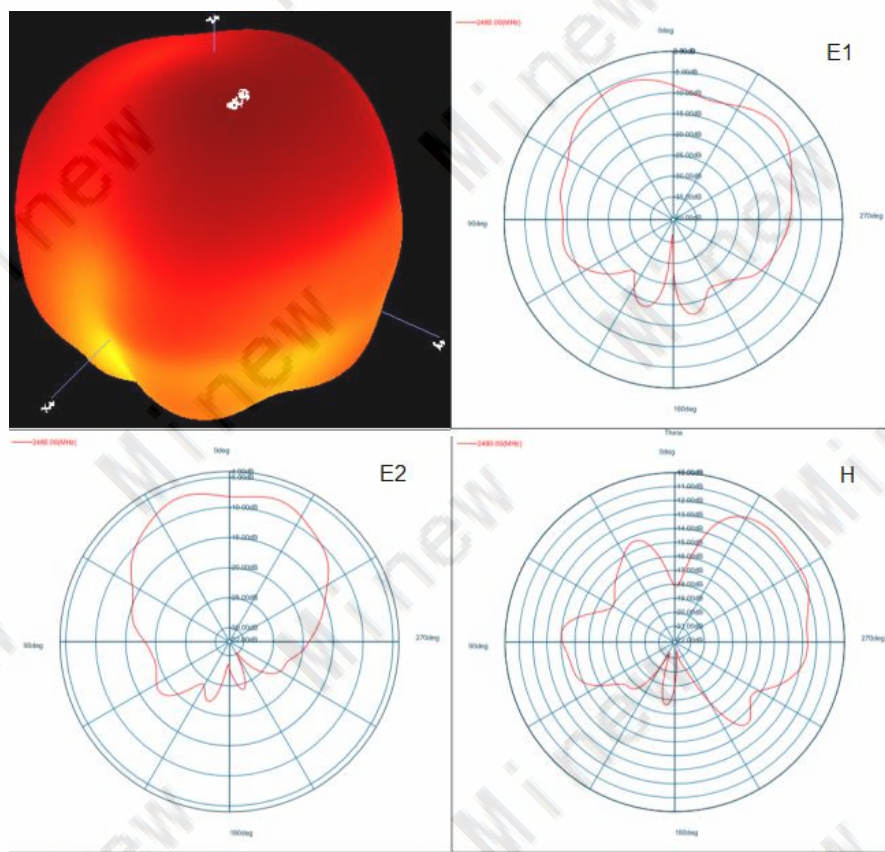
3.4.2 Gain



2402MHz



2440MHz



2480MHz



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Y-YB-CR-115

V001

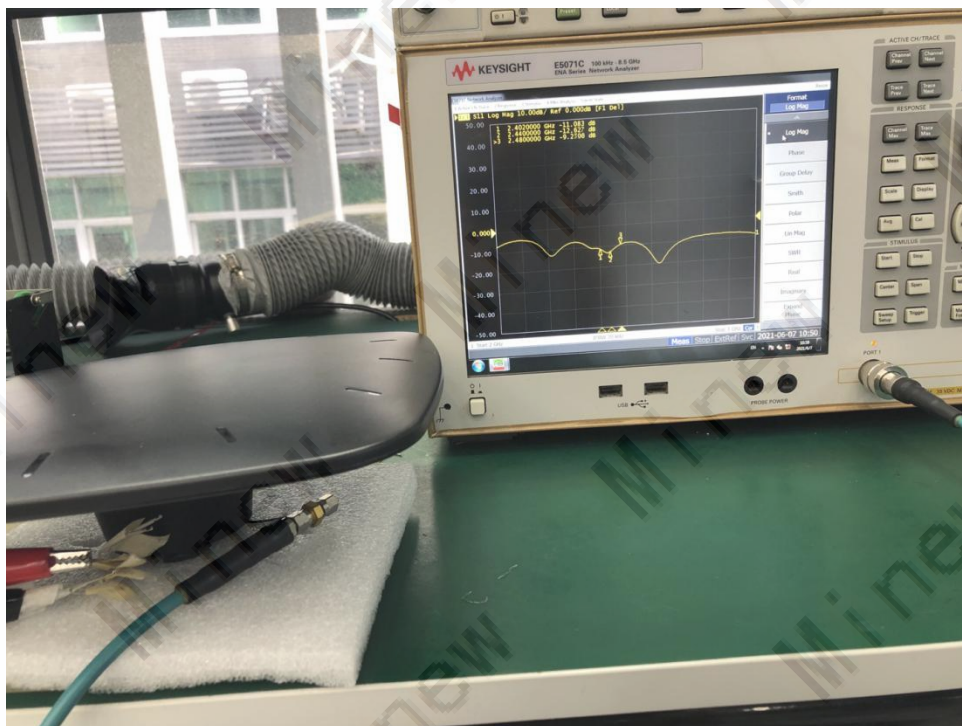
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-4.18572	-3.650712624
2402000000	-4.10723	
2404000000	-3.9416	
2406000000	-3.85998	
2408000000	-3.97094	
2410000000	-3.99438	
2412000000	-3.90185	
2414000000	-3.6984	
2416000000	-3.78536	
2418000000	-3.96134	
2420000000	-4.08586	
2422000000	-3.766	
2424000000	-3.67377	
2426000000	-3.73564	
2428000000	-3.80244	
2430000000	-3.79834	
2432000000	-3.65071	
2434000000	-3.73408	
2436000000	-4.02972	
2438000000	-4.1585	
2440000000	-4.36607	
2442000000	-4.32426	
2444000000	-4.34749	
2446000000	-4.44038	
2448000000	-4.60278	
2450000000	-4.63823	
2452000000	-4.61165	
2454000000	-4.71556	
2456000000	-4.87823	
2458000000	-5.08642	
2460000000	-5.17881	
2462000000	-4.81019	
2464000000	-4.79721	
2466000000	-4.8982	
2468000000	-5.05261	
2470000000	-4.94459	
2472000000	-4.92135	
2474000000	-4.90681	
2476000000	-5.12103	
2478000000	-5.27619	
2480000000	-5.32618	

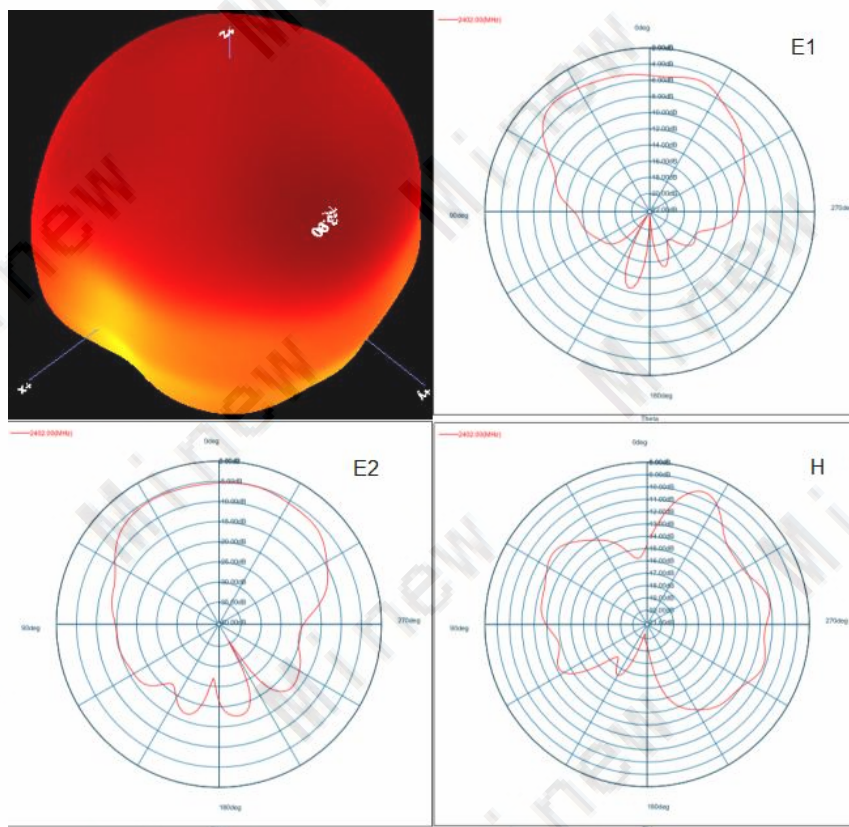
Gain data (Ant3)

3.5 ANT4

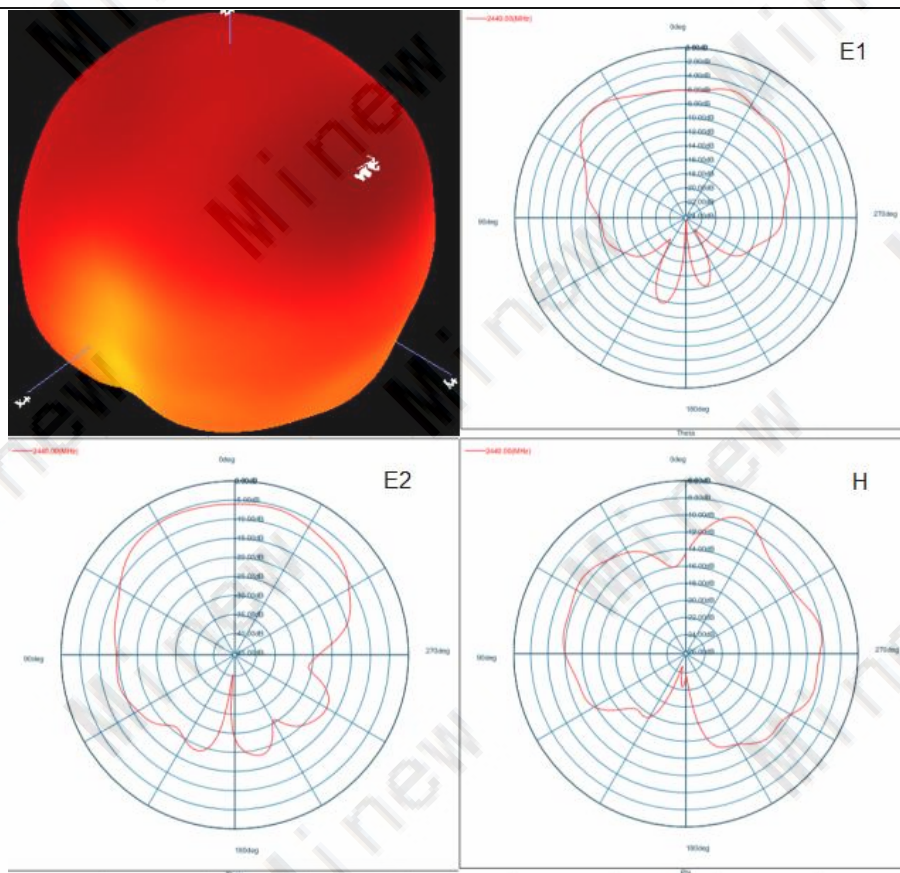
3.5.1 S11



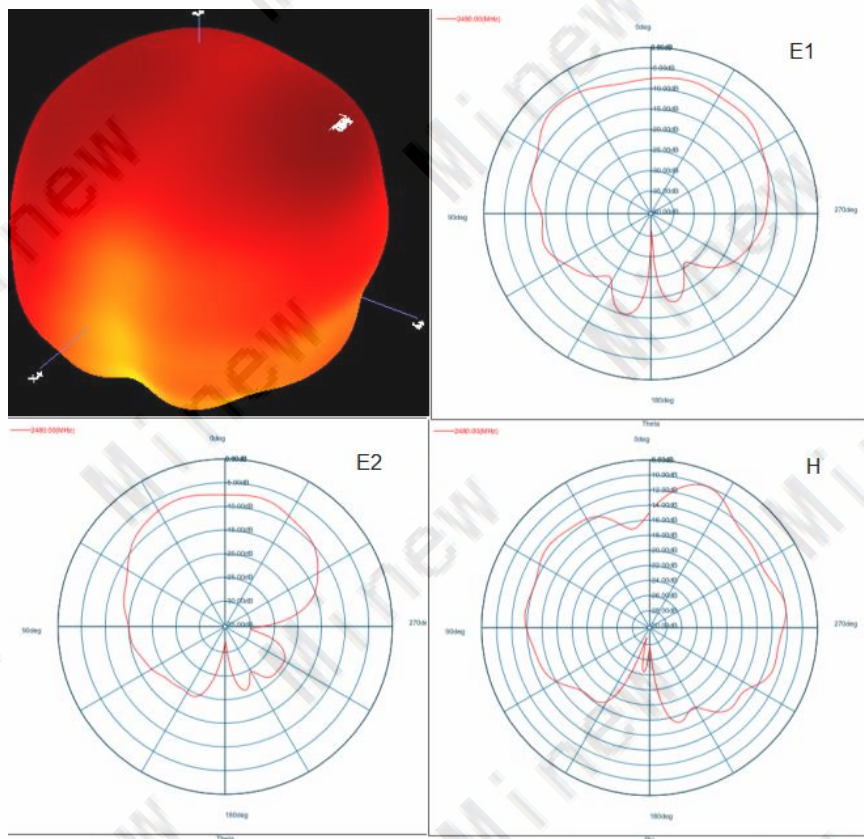
3.5.2 Gain



2402MHz



2440MHz



2480MHz



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产品天线测试报告 (The Antenna Test Report)

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V001

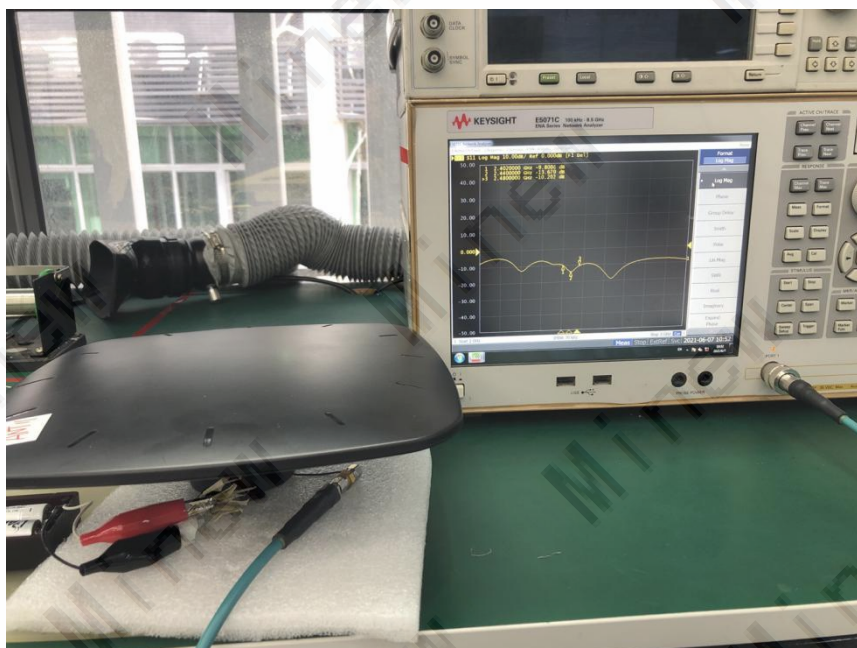
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-3.86693	-3.487774106
2402000000	-3.90397	
2404000000	-3.84987	
2406000000	-3.80262	
2408000000	-3.82039	
2410000000	-3.83905	
2412000000	-3.78384	
2414000000	-3.64953	
2416000000	-3.62893	
2418000000	-3.68692	
2420000000	-3.75892	
2422000000	-3.71031	
2424000000	-3.61187	
2426000000	-3.60106	
2428000000	-3.66477	
2430000000	-3.70274	
2432000000	-3.5849	
2434000000	-3.48777	
2436000000	-3.54891	
2438000000	-3.72112	
2440000000	-3.83739	
2442000000	-3.81101	
2444000000	-3.83075	
2446000000	-3.9816	
2448000000	-4.18316	
2450000000	-4.23445	
2452000000	-4.17	
2454000000	-4.21544	
2456000000	-4.41333	
2458000000	-4.65504	
2460000000	-4.73493	
2462000000	-4.72634	
2464000000	-4.75808	
2466000000	-4.9249	
2468000000	-5.10147	
2470000000	-5.16979	
2472000000	-5.12983	
2474000000	-5.20386	
2476000000	-5.41794	
2478000000	-5.59027	
2480000000	-5.61954	

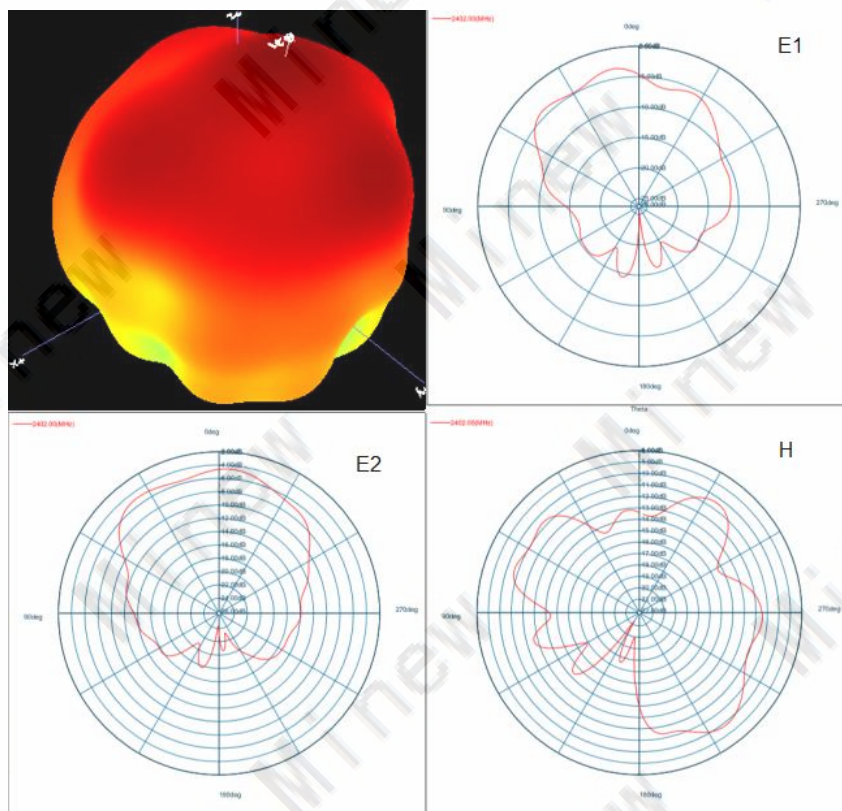
Gain data (Ant4)

3.6 ANT5

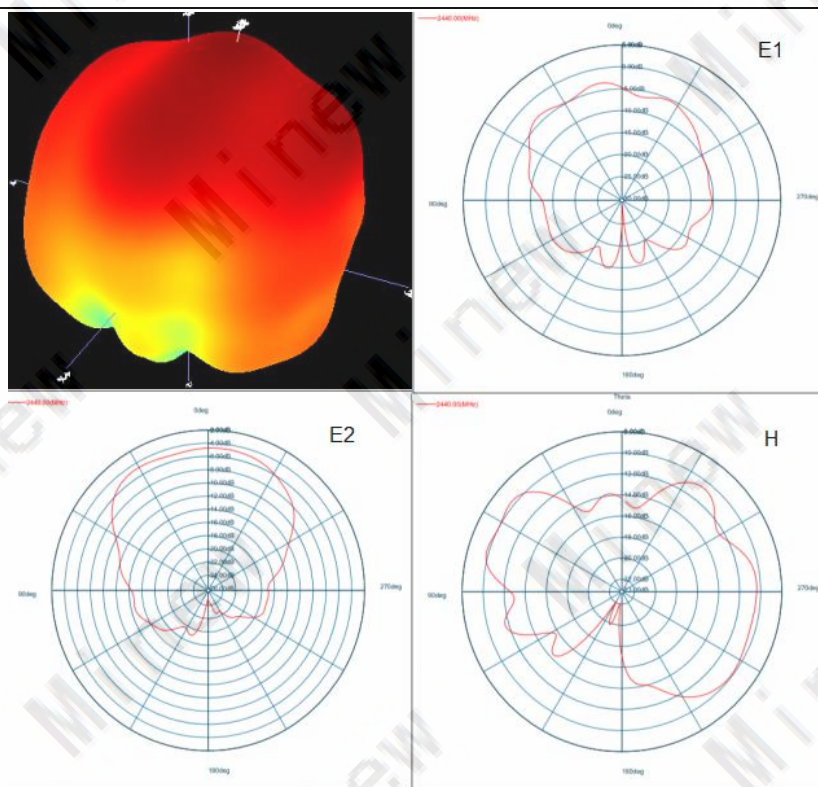
3.6.1 S11



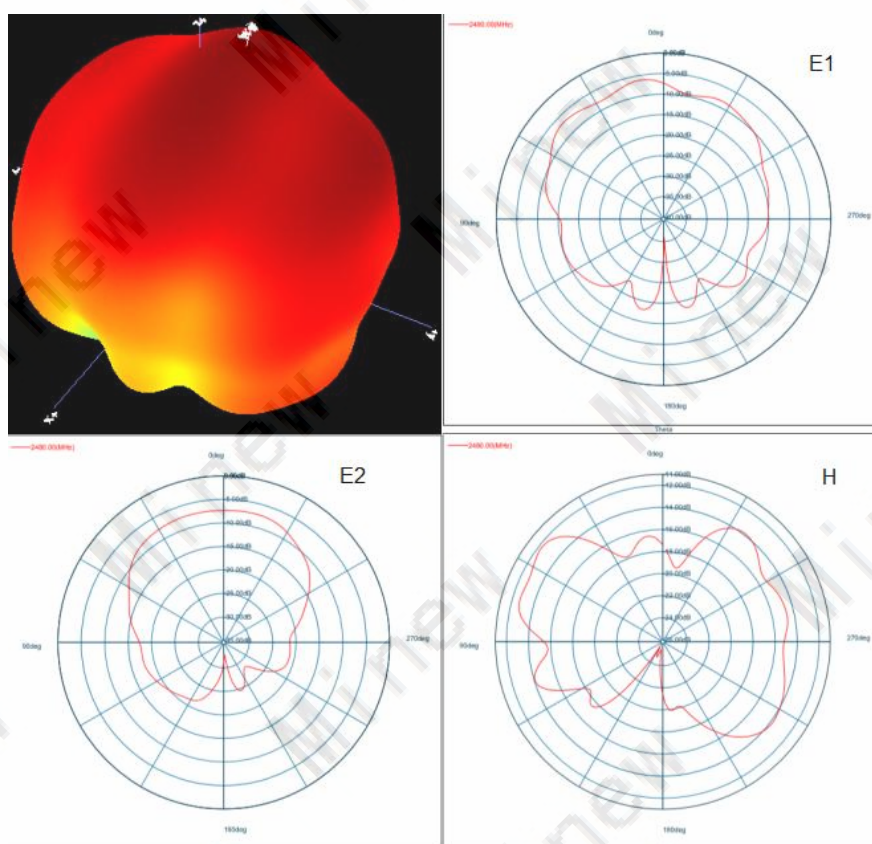
3.6.2 Gain



2402MHz



2440MHz



2480MHz



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产品天线测试报告 (The Antenna Test Report)

Y-YB-CR-115

V001

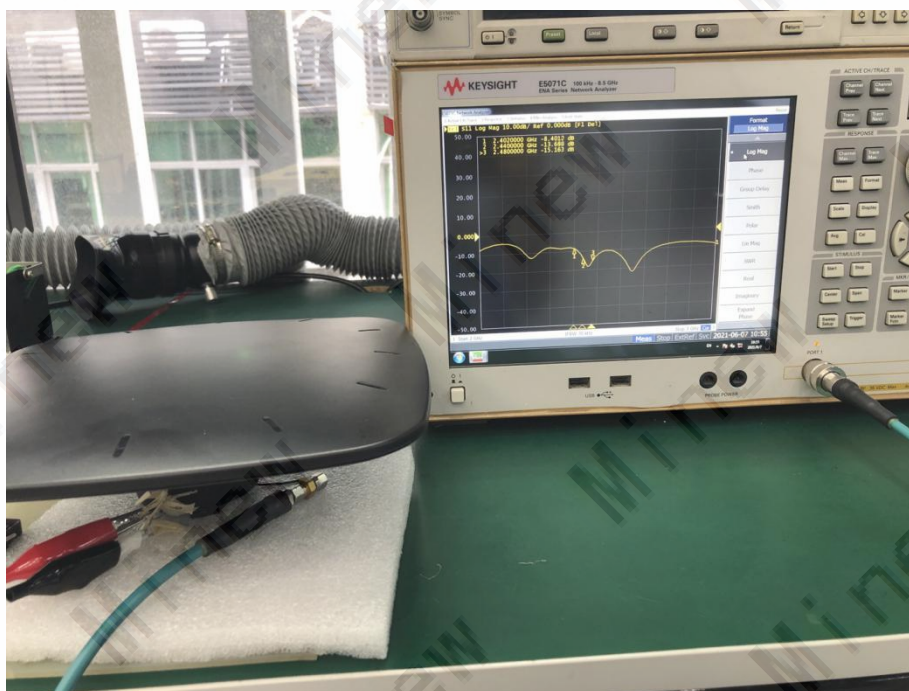
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-3.37731	-2.697004595
2402000000	-3.30506	
2404000000	-2.99272	
2406000000	-2.90399	
2408000000	-3.11499	
2410000000	-3.24982	
2412000000	-3.03267	
2414000000	-2.697	
2416000000	-2.7302	
2418000000	-3.02283	
2420000000	-3.15602	
2422000000	-2.89302	
2424000000	-2.70409	
2426000000	-2.86601	
2428000000	-3.15707	
2430000000	-3.19488	
2432000000	-2.88469	
2434000000	-2.74539	
2436000000	-3.01403	
2438000000	-3.3274	
2440000000	-3.31093	
2442000000	-3.06719	
2444000000	-3.13623	
2446000000	-3.5115	
2448000000	-3.79664	
2450000000	-3.64643	
2452000000	-3.40409	
2454000000	-3.53766	
2456000000	-3.91693	
2458000000	-4.1368	
2460000000	-3.99164	
2462000000	-3.85732	
2464000000	-4.02157	
2466000000	-4.25285	
2468000000	-4.43319	
2470000000	-4.27411	
2472000000	-4.13398	
2474000000	-4.28947	
2476000000	-4.53623	
2478000000	-4.69913	

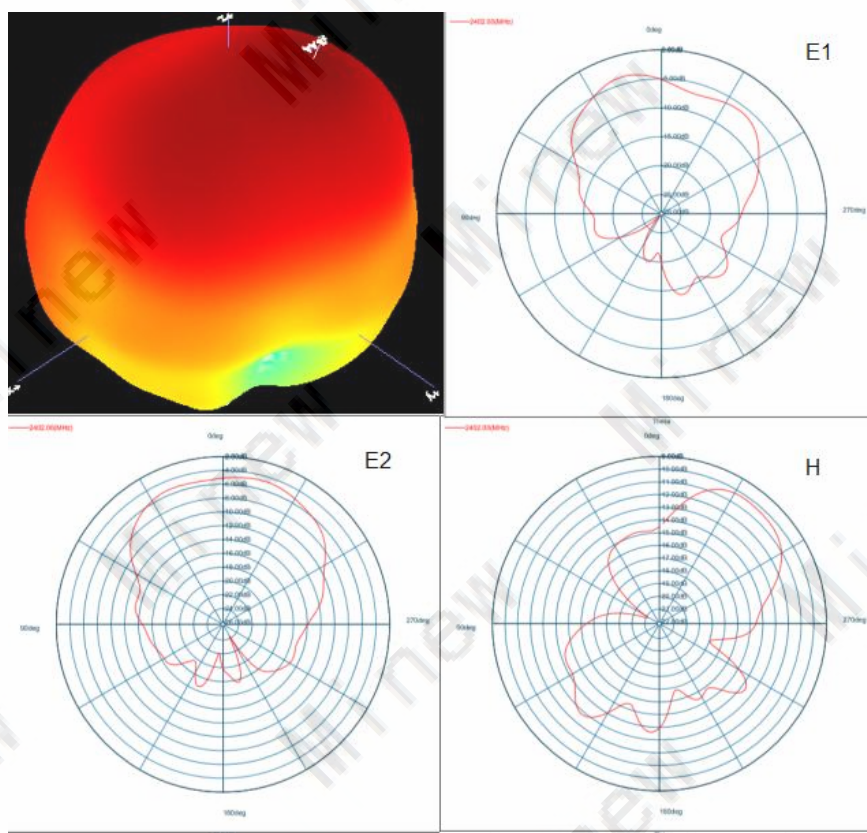
Gain data (Ant5)

3.7 ANT6

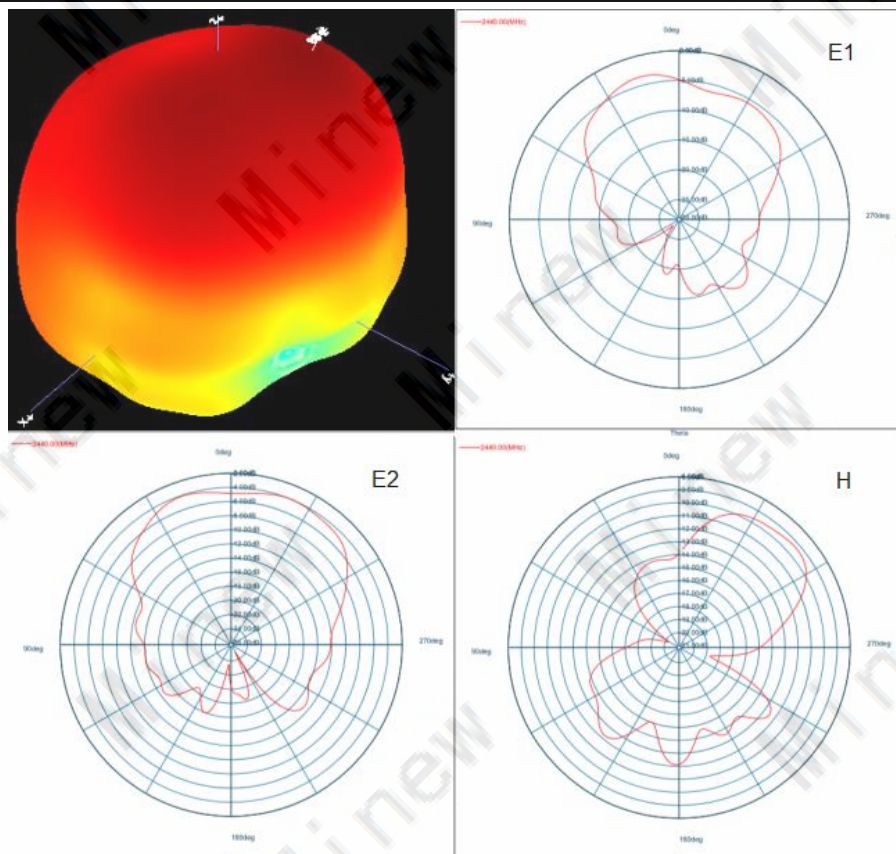
3.7.1 S11



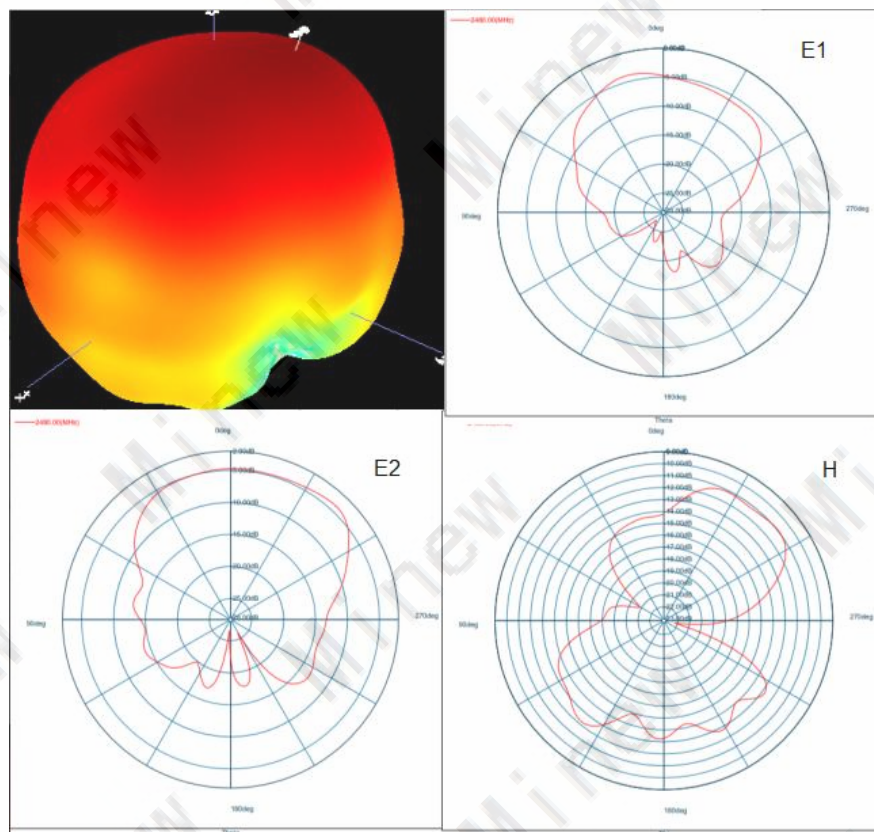
3.7.2 Gain



2402MHz



2440MHz



2480MHz



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产品天线测试报告 (The Antenna Test Report)

Y-YB-CR-115

V001

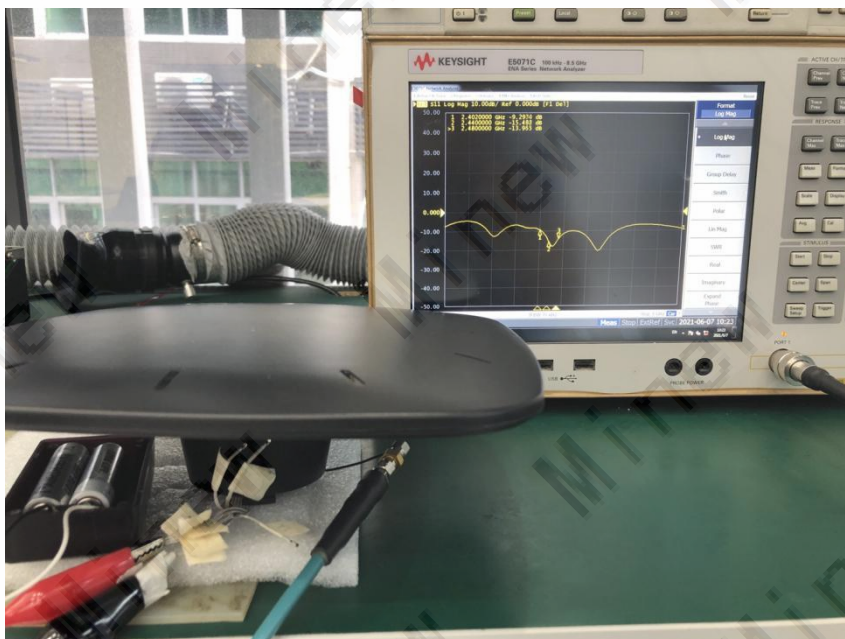
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-3.48637	-2.789008851
2402000000	-3.44142	
2404000000	-3.24374	
2406000000	-3.19113	
2408000000	-3.29175	
2410000000	-3.32507	
2412000000	-3.18749	
2414000000	-2.95476	
2416000000	-2.95372	
2418000000	-3.07325	
2420000000	-3.09819	
2422000000	-2.973	
2424000000	-2.88643	
2426000000	-2.94777	
2428000000	-3.03626	
2430000000	-3.02404	
2432000000	-2.86177	
2434000000	-2.78901	
2436000000	-2.89127	
2438000000	-3.01325	
2440000000	-3.03293	
2442000000	-2.9304	
2444000000	-2.9645	
2446000000	-3.14502	
2448000000	-3.281	
2450000000	-3.22779	
2452000000	-3.12129	
2454000000	-3.16689	
2456000000	-3.37596	
2458000000	-3.50469	
2460000000	-3.4631	
2462000000	-3.36614	
2464000000	-3.46079	
2466000000	-3.64353	
2468000000	-3.7368	
2470000000	-3.6281	
2472000000	-3.49767	
2474000000	-3.59844	
2476000000	-3.81282	
2478000000	-3.90561	
2480000000	-3.80351	

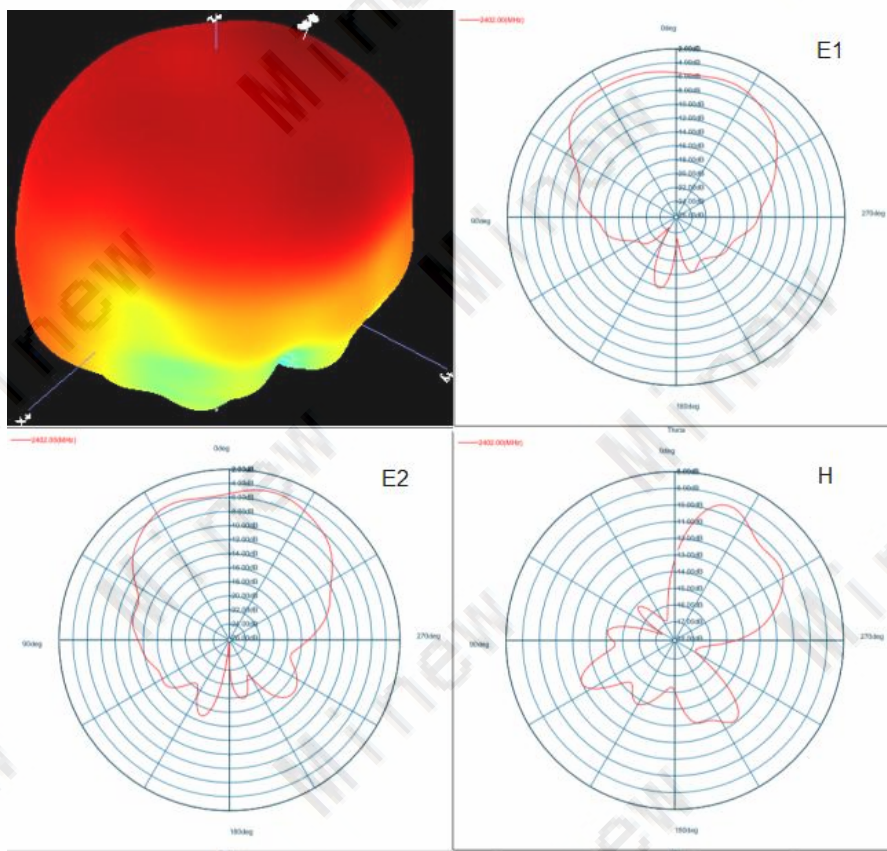
Gain data (Ant6)

3.8 ANT7

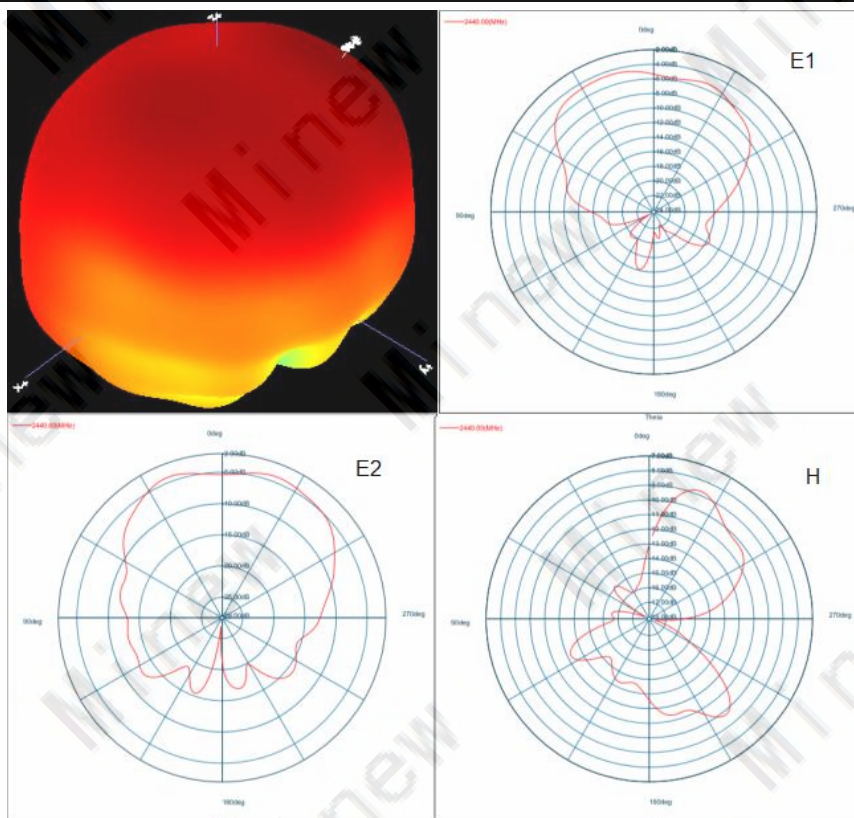
3.8.1 S11



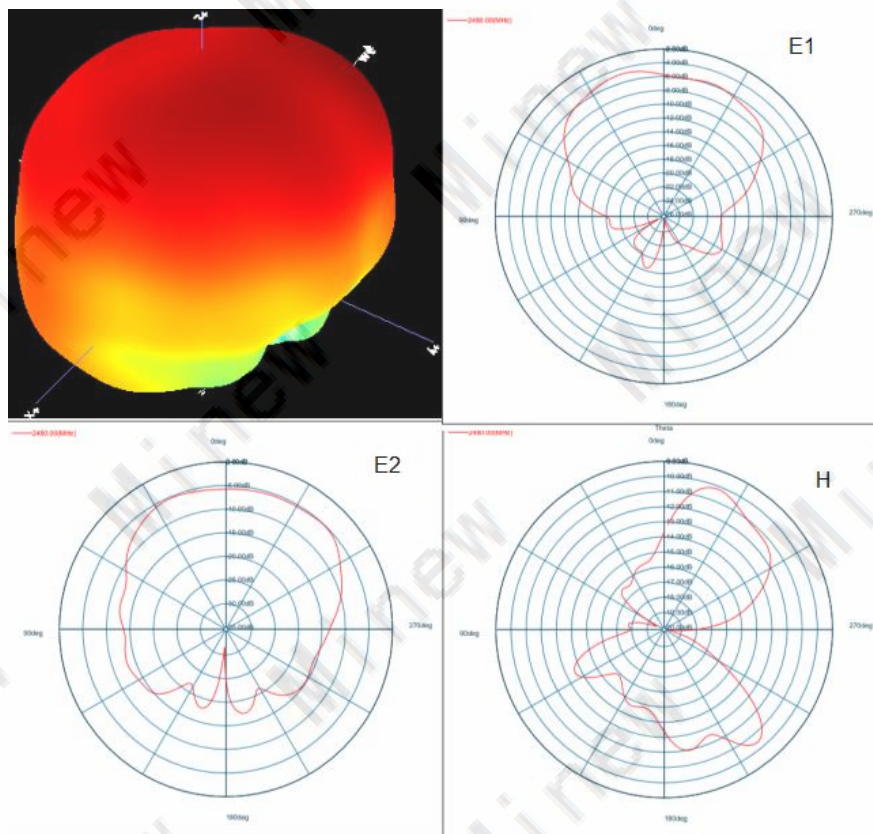
3.8.2 Gain



2402MHz



2440MHz



2480MHz



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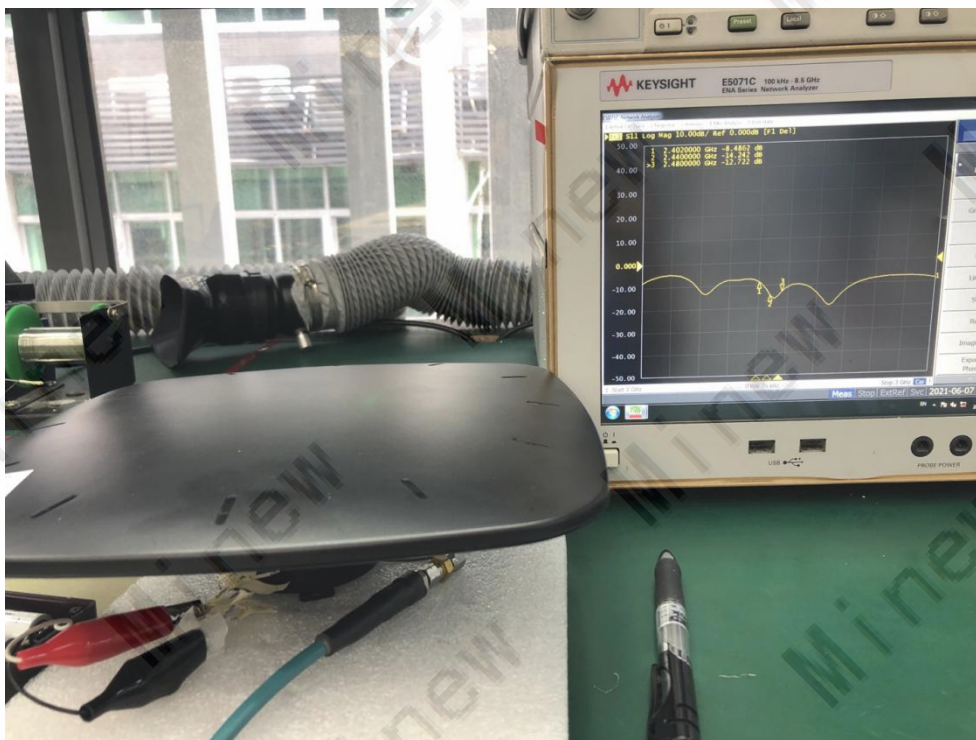
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-3.99073	-2.891172414
2402000000	-3.98623	
2404000000	-3.85542	
2406000000	-3.77649	
2408000000	-3.772	
2410000000	-3.7384	
2412000000	-3.67614	
2414000000	-3.53077	
2416000000	-3.46494	
2418000000	-3.42826	
2420000000	-3.42903	
2422000000	-3.4034	
2424000000	-3.32673	
2426000000	-3.2479	
2428000000	-3.16404	
2430000000	-3.17789	
2432000000	-3.13857	
2434000000	-2.99769	
2436000000	-2.9073	
2438000000	-2.94838	
2440000000	-3.06384	
2442000000	-3.02746	
2444000000	-2.89117	
2446000000	-2.89991	
2448000000	-3.03619	
2450000000	-3.10038	
2452000000	-2.99022	
2454000000	-2.90421	
2456000000	-3.00558	
2458000000	-3.1791	
2460000000	-3.21156	
2462000000	-3.09367	
2464000000	-3.04746	
2466000000	-3.13513	
2468000000	-3.26779	
2470000000	-3.27303	
2472000000	-3.16623	
2474000000	-3.16443	
2476000000	-3.29824	
2478000000	-3.45793	
2480000000	-3.44017	

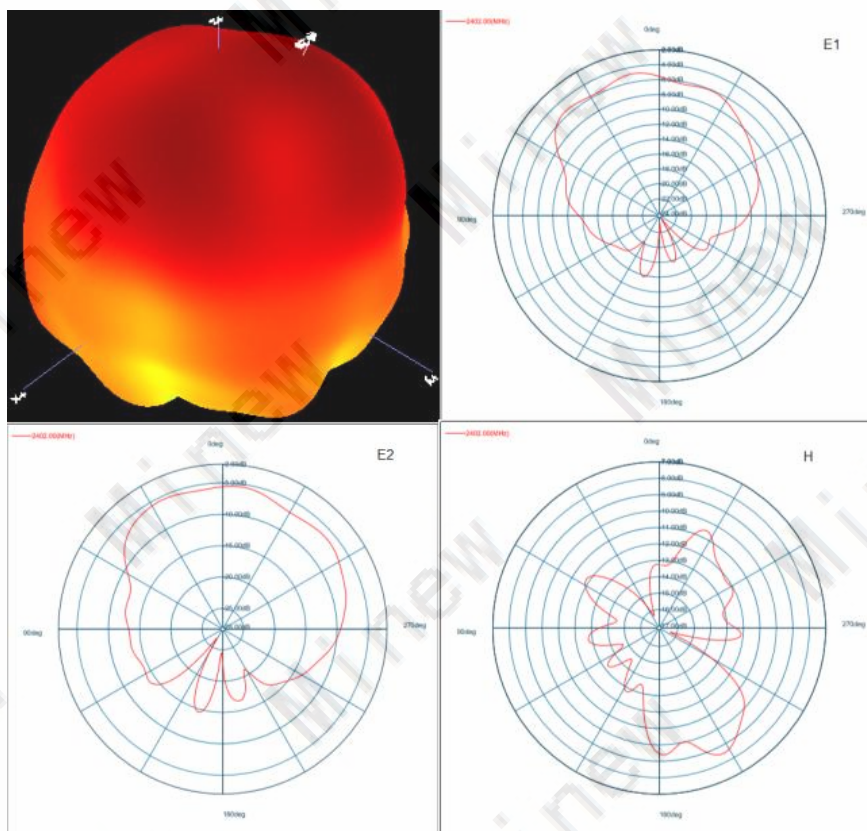
Gain data (Ant7)

3.9 ANT8

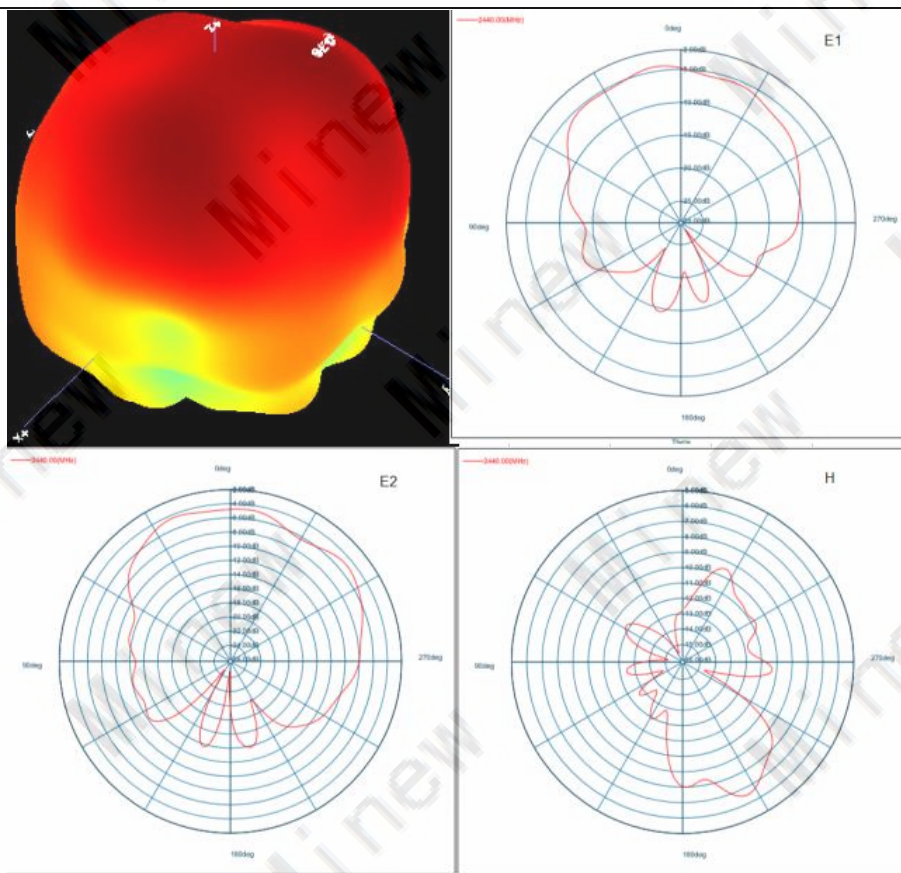
3.9.1 S11



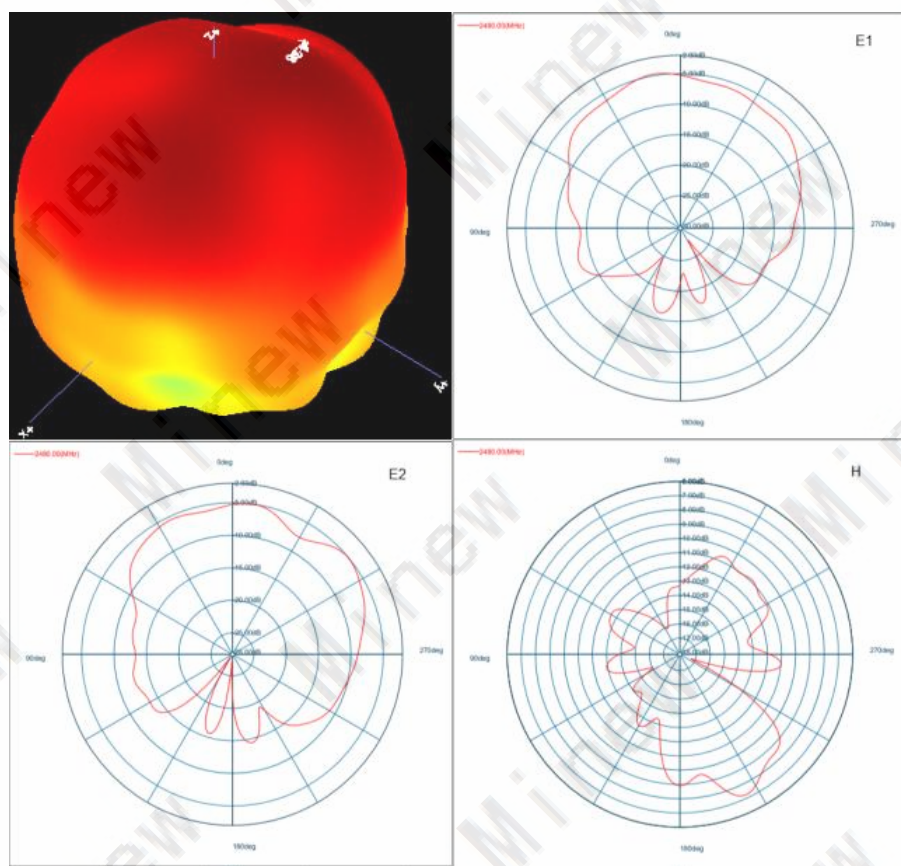
3.9.2 Gain



2402MHz



2440MHz



2480MHz



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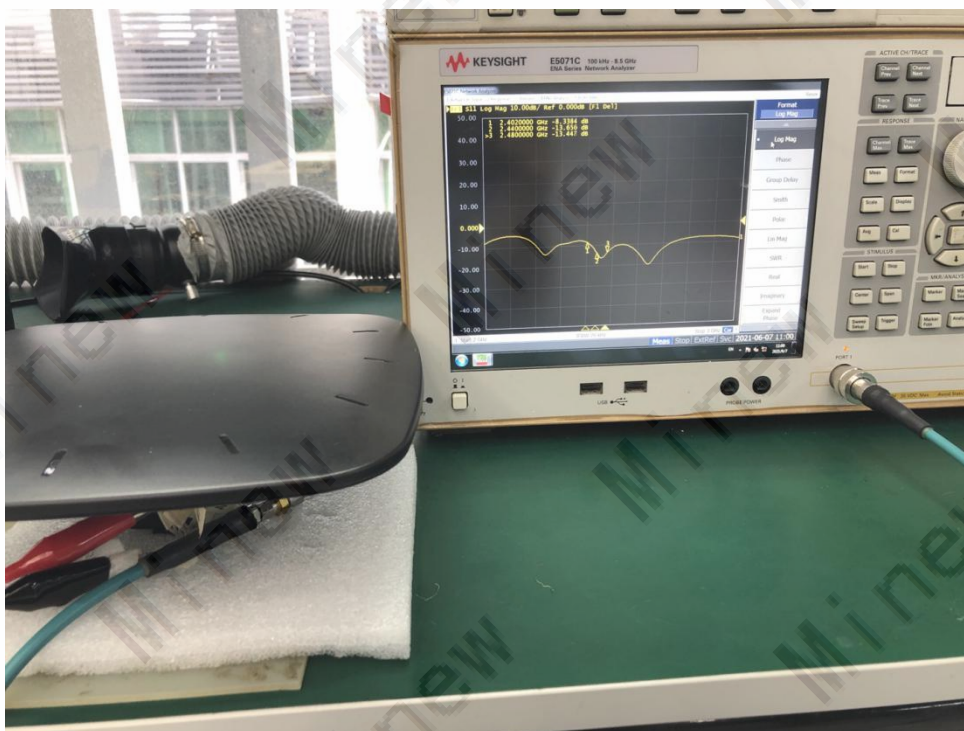
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-4.32522	-3.535947895
2402000000	-4.29461	
2404000000	-4.10379	
2406000000	-4.0061	
2408000000	-4.0607	
2410000000	-4.06986	
2412000000	-3.96451	
2414000000	-3.76096	
2416000000	-3.71512	
2418000000	-3.79206	
2420000000	-3.83308	
2422000000	-3.74017	
2424000000	-3.62946	
2426000000	-3.66751	
2428000000	-3.73098	
2430000000	-3.74497	
2432000000	-3.62307	
2434000000	-3.53595	
2436000000	-3.61343	
2438000000	-3.72523	
2440000000	-3.76223	
2442000000	-3.67736	
2444000000	-3.69046	
2446000000	-3.8037	
2448000000	-3.94712	
2450000000	-3.93759	
2452000000	-3.82181	
2454000000	-3.85568	
2456000000	-4.02125	
2458000000	-4.14858	
2460000000	-4.12806	
2462000000	-4.02435	
2464000000	-4.08754	
2466000000	-4.2221	
2468000000	-4.30834	
2470000000	-4.2264	
2472000000	-4.10967	
2474000000	-4.21621	
2476000000	-4.39226	
2478000000	-4.4869	
2480000000	-4.38362	

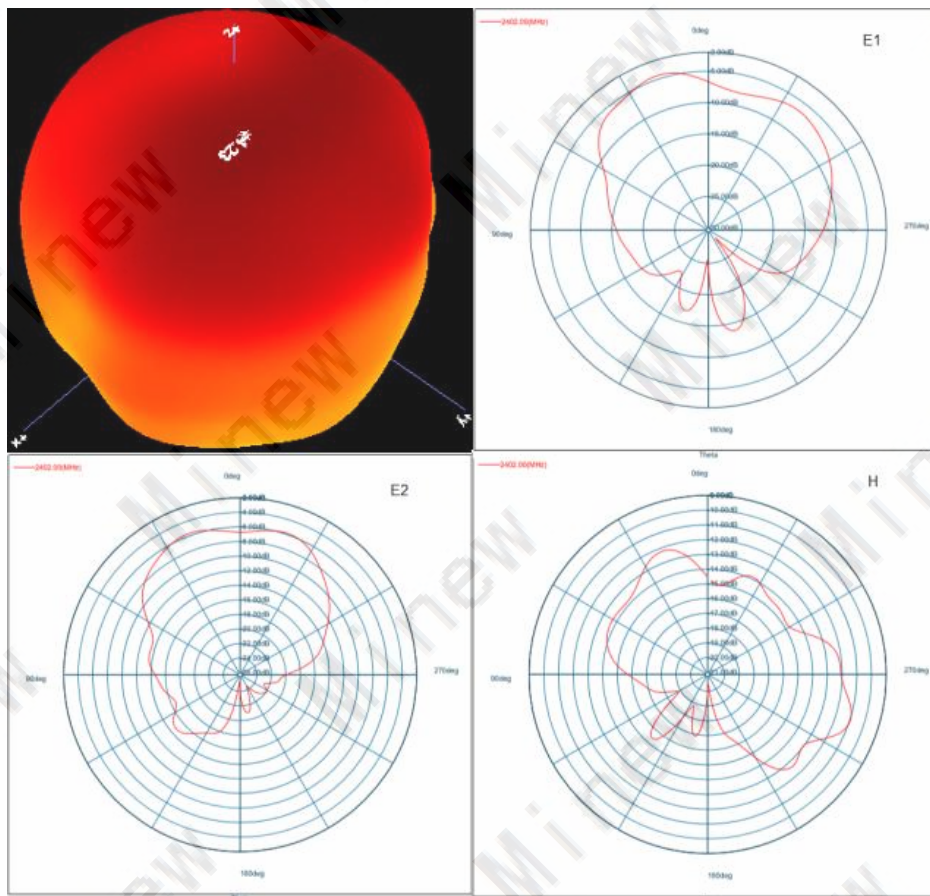
Gain data (Ant8)

3.10 ANT9

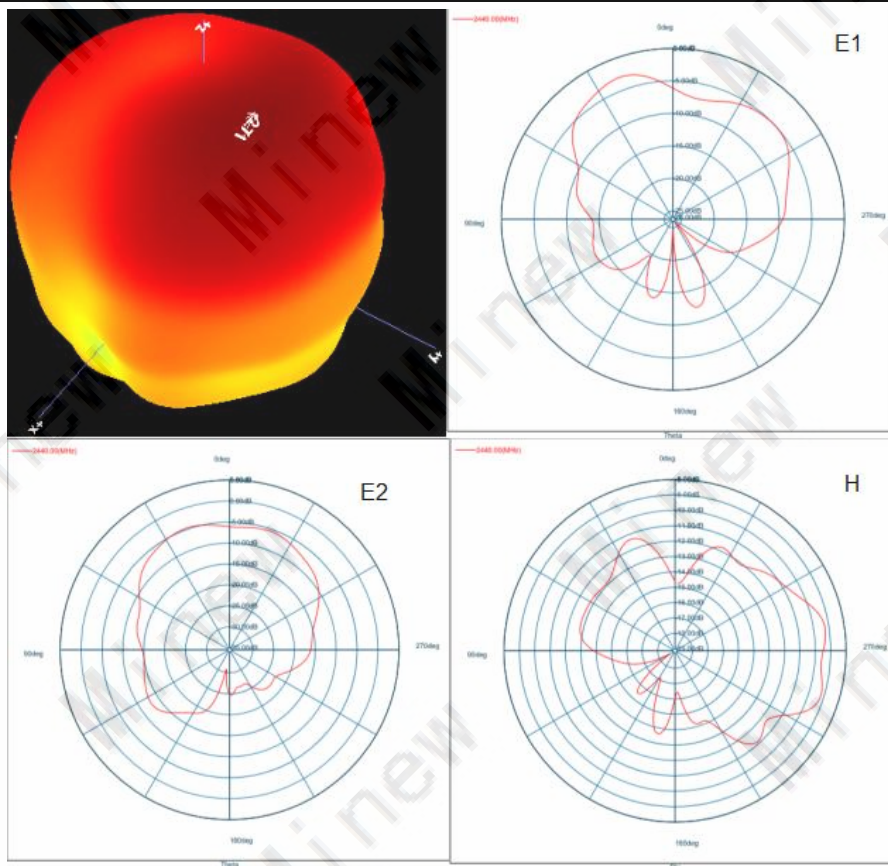
3.10.1 S11



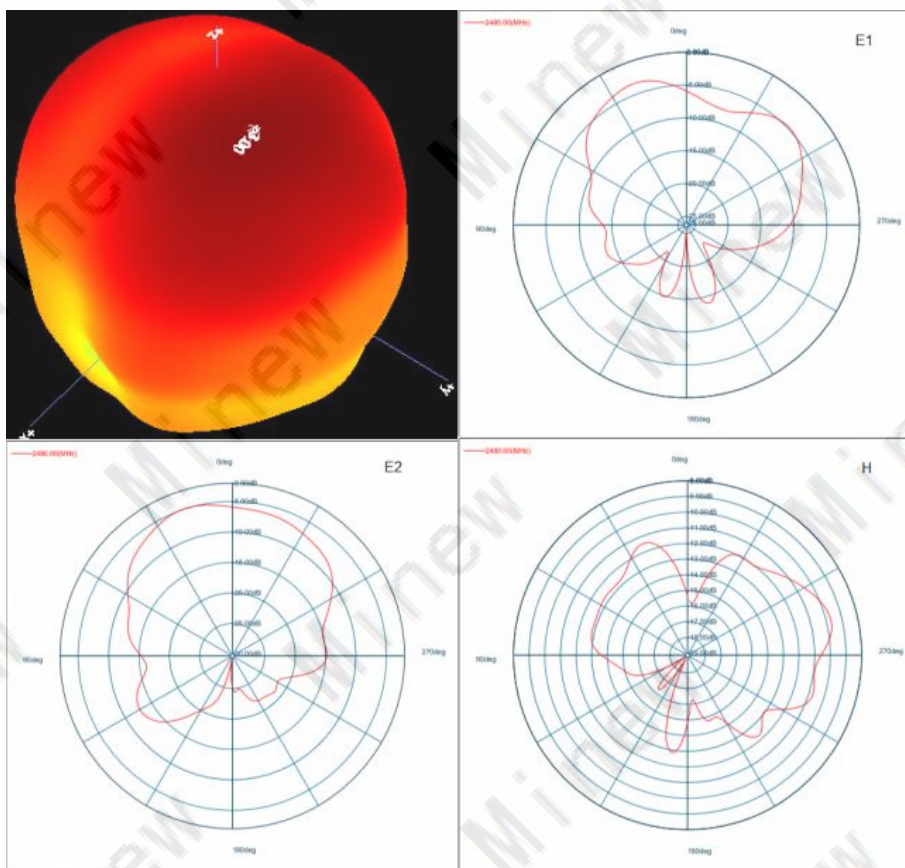
3.10.2 Gain



2402MHz



2440MHz



2480MHz



深圳云里物里科技股份有限公司
产品天线测试报告 (The Antenna Test Report)

Y-YB-CR-115

V001

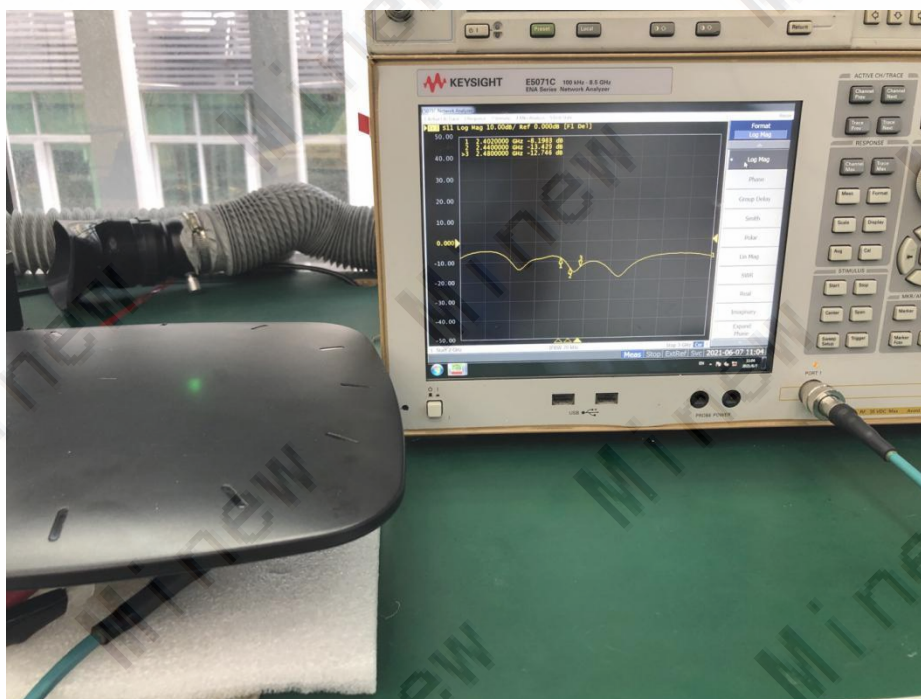
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-4.273	-2.619842906
2402000000	-4.22793	
2404000000	-4.03084	
2406000000	-3.89428	
2408000000	-3.83937	
2410000000	-3.79514	
2412000000	-3.66305	
2414000000	-3.43083	
2416000000	-3.31363	
2418000000	-3.29811	
2420000000	-3.28358	
2422000000	-3.13244	
2424000000	-2.99099	
2426000000	-2.95415	
2428000000	-2.93413	
2430000000	-2.88741	
2432000000	-2.72546	
2434000000	-2.61984	
2436000000	-2.64083	
2438000000	-2.70004	
2440000000	-2.71092	
2442000000	-2.63517	
2444000000	-2.6368	
2446000000	-2.70301	
2448000000	-2.78624	
2450000000	-2.74856	
2452000000	-2.68392	
2454000000	-2.69227	
2456000000	-2.77761	
2458000000	-2.87569	
2460000000	-2.87722	
2462000000	-2.8067	
2464000000	-2.80461	
2466000000	-2.85206	
2468000000	-2.92105	
2470000000	-2.90102	
2472000000	-2.83039	
2474000000	-2.84362	
2476000000	-2.92905	
2478000000	-3.01973	

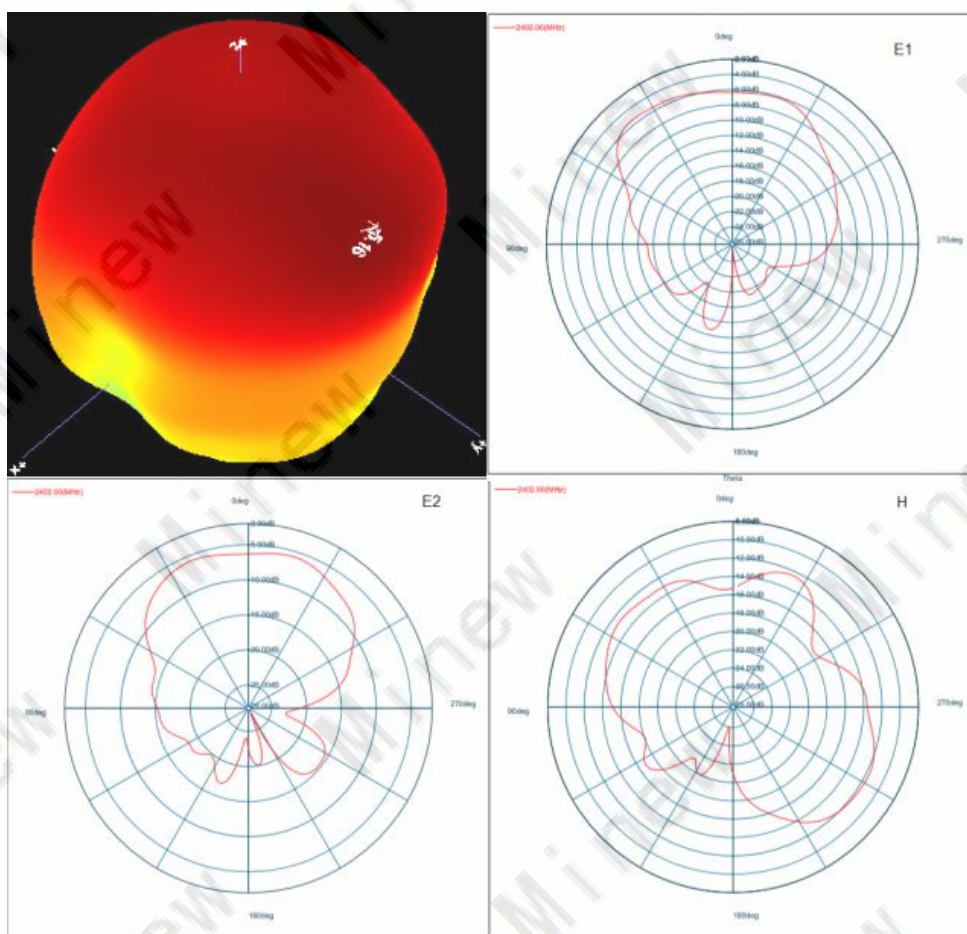
Gain data (Ant9)

3.11 ANT10

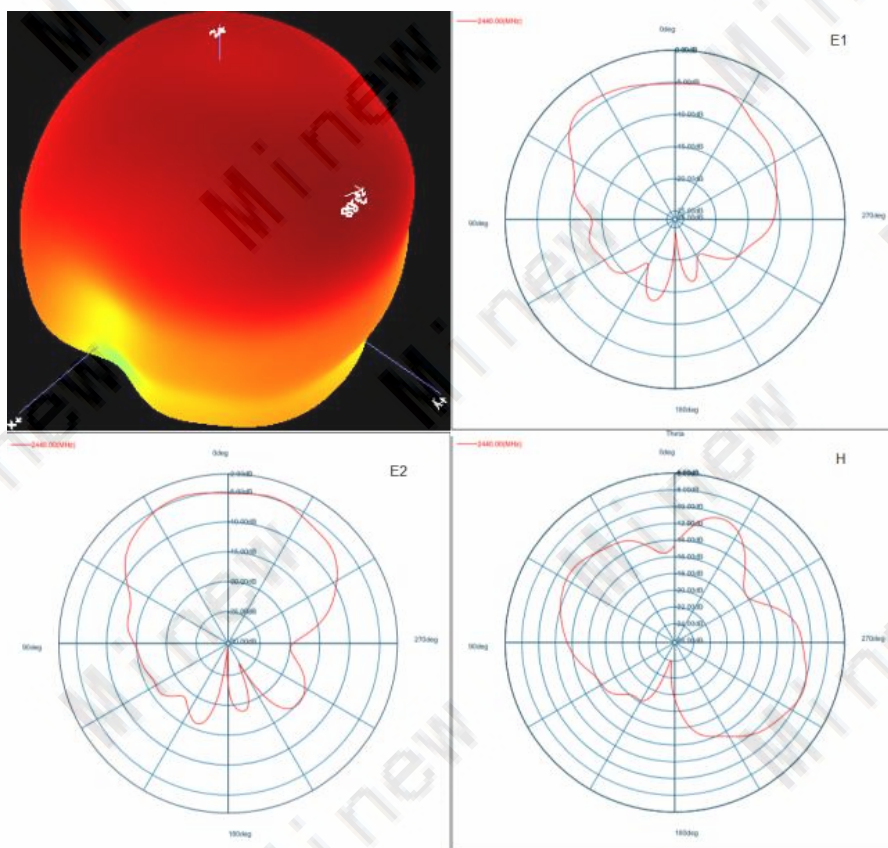
3.11.1 S11



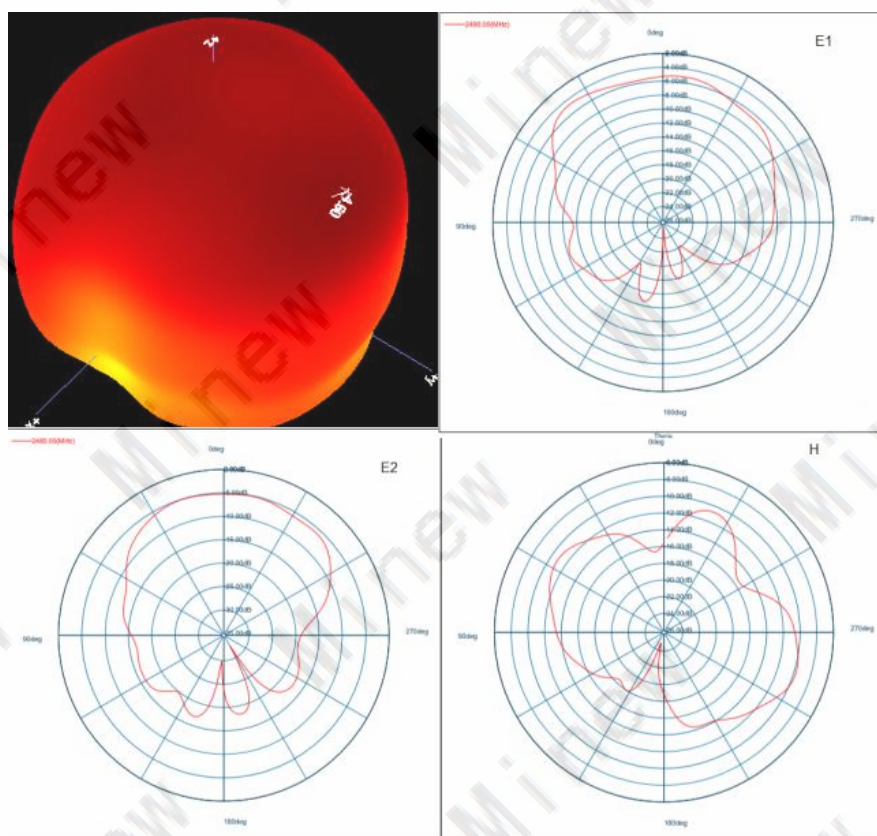
3.11.2 Gain



2402MHz



2440MHz



2480MHz



深圳云里物里科技股份有限公司
产品天线测试报告 (The Antenna Test Report)

Y-YB-CR-115

V001

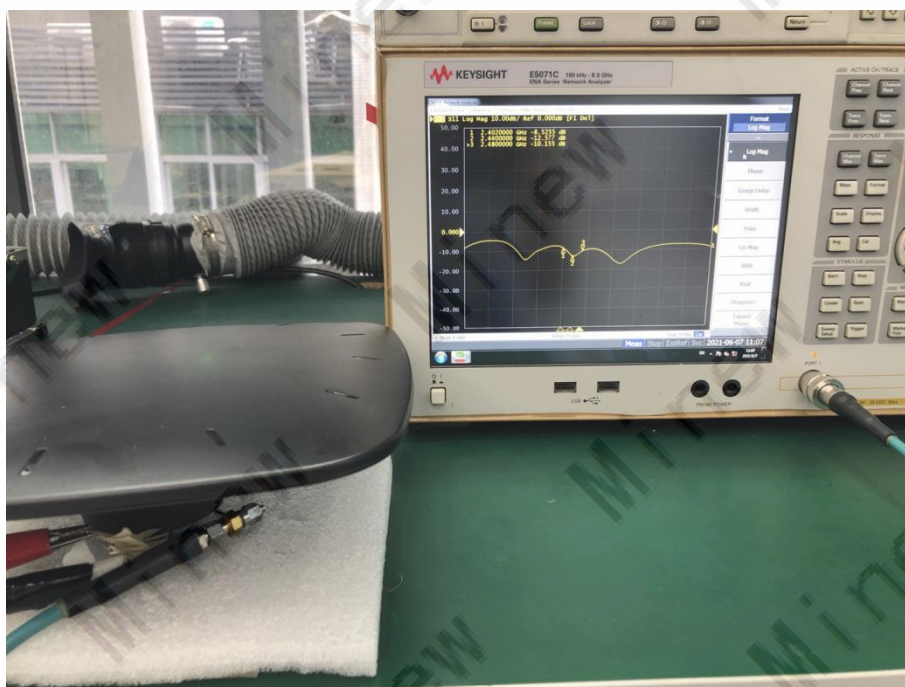
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-5.1345	-3.495534335
2402000000	-5.15772	
2404000000	-4.96713	
2406000000	-4.79173	
2408000000	-4.71197	
2410000000	-4.67624	
2412000000	-4.58349	
2414000000	-4.29981	
2416000000	-4.15649	
2418000000	-4.14077	
2420000000	-4.19226	
2422000000	-4.11343	
2424000000	-3.92049	
2426000000	-3.82096	
2428000000	-3.81232	
2430000000	-3.84452	
2432000000	-3.70942	
2434000000	-3.52226	
2436000000	-3.49553	
2438000000	-3.5828	
2440000000	-3.67758	
2442000000	-3.61741	
2444000000	-3.53716	
2446000000	-3.60253	
2448000000	-3.74964	
2450000000	-3.7923	
2452000000	-3.69371	
2454000000	-3.65746	
2456000000	-3.76978	
2458000000	-3.95881	
2460000000	-4.04827	
2462000000	-4.00569	
2464000000	-3.9919	
2466000000	-4.08277	
2468000000	-4.21845	
2470000000	-4.2865	
2472000000	-4.23063	
2474000000	-4.25315	
2476000000	-4.37965	
2478000000	-4.55946	
2480000000	-4.60251	

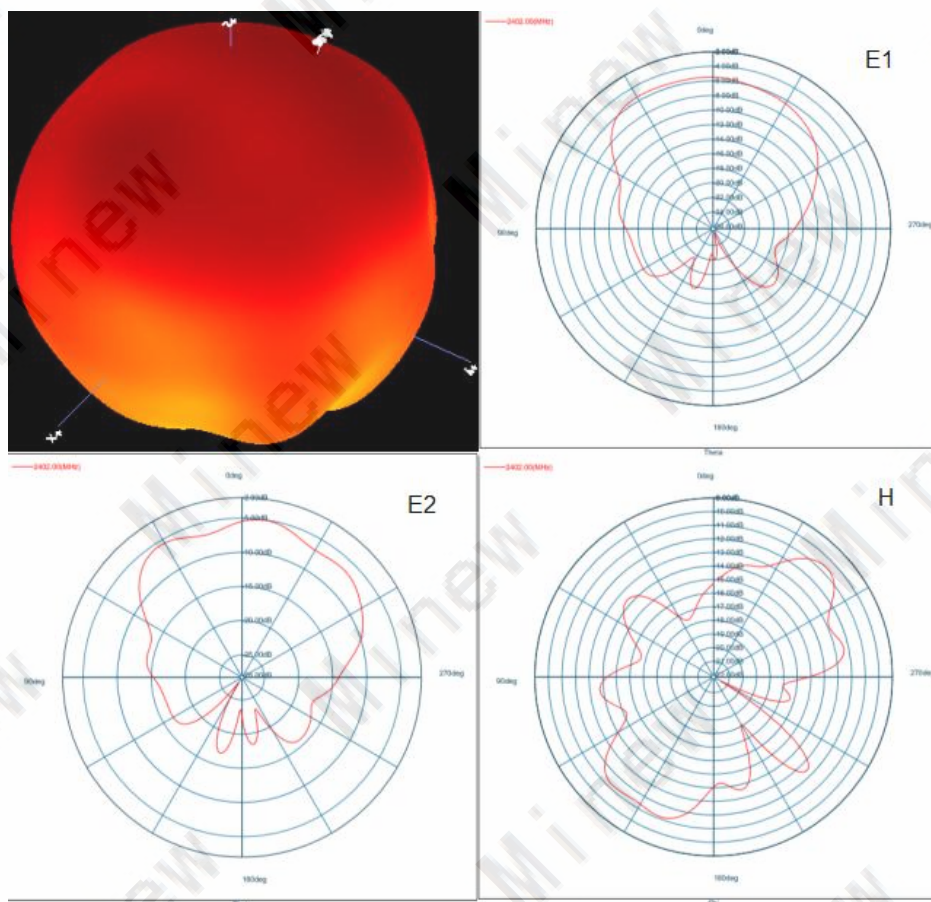
Gain data (Ant10)

3.12 ANT11

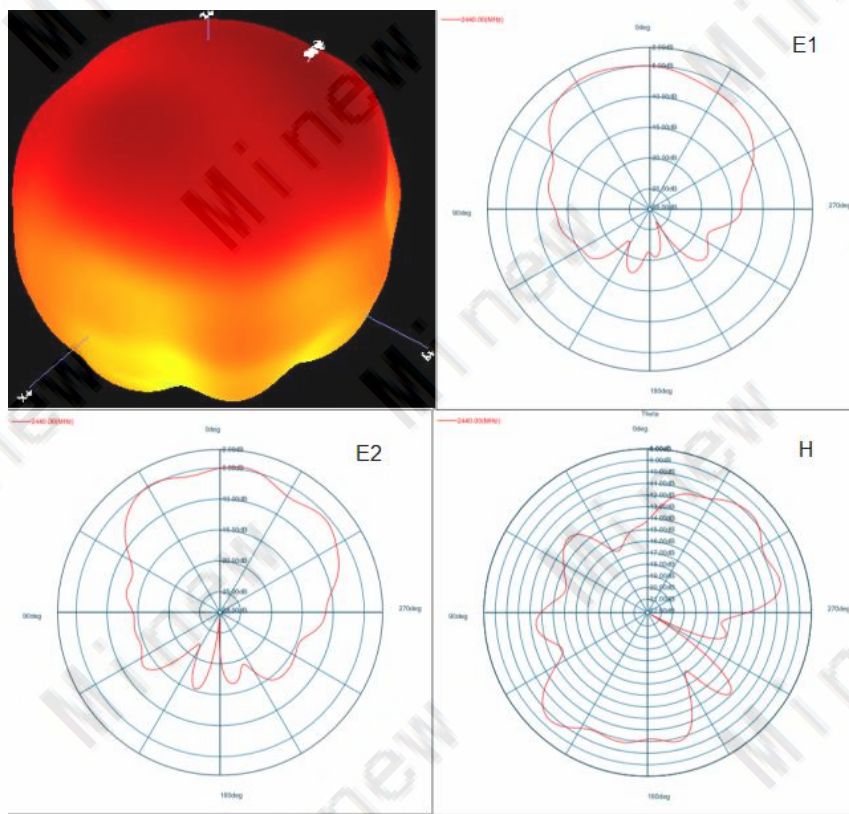
3.12.1 S11



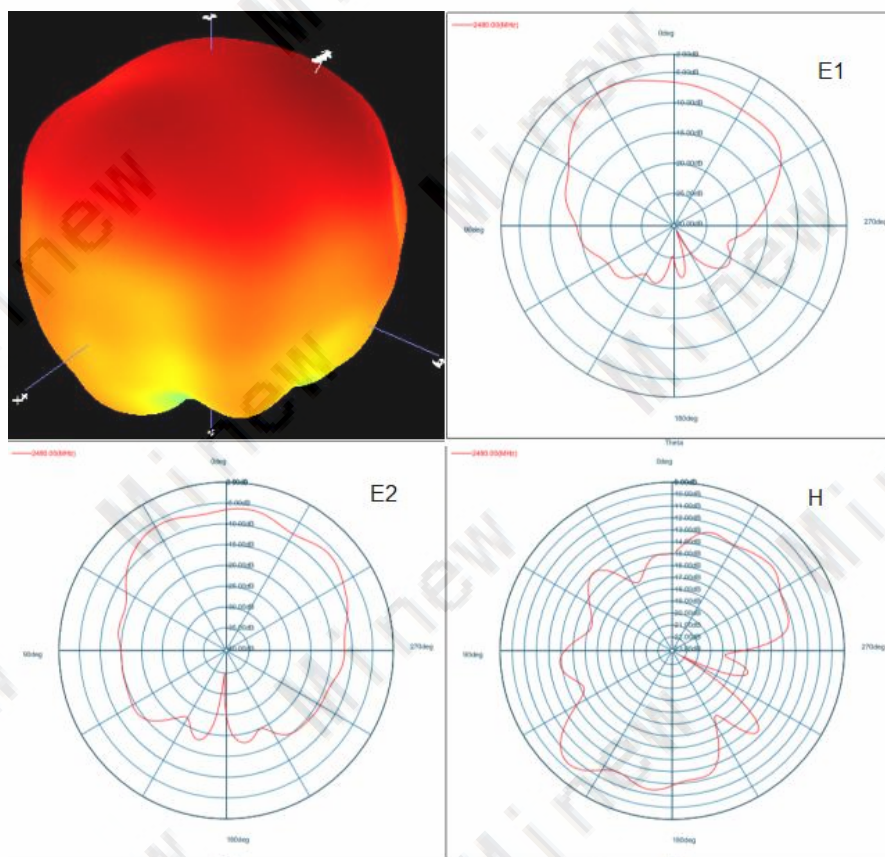
3.12.2 Gain



2402MHz



2440MHz



2480MHz



深圳云里物里科技股份有限公司
产品天线测试报告 (The Antenna Test Report)

Y-YB-CR-115

V001

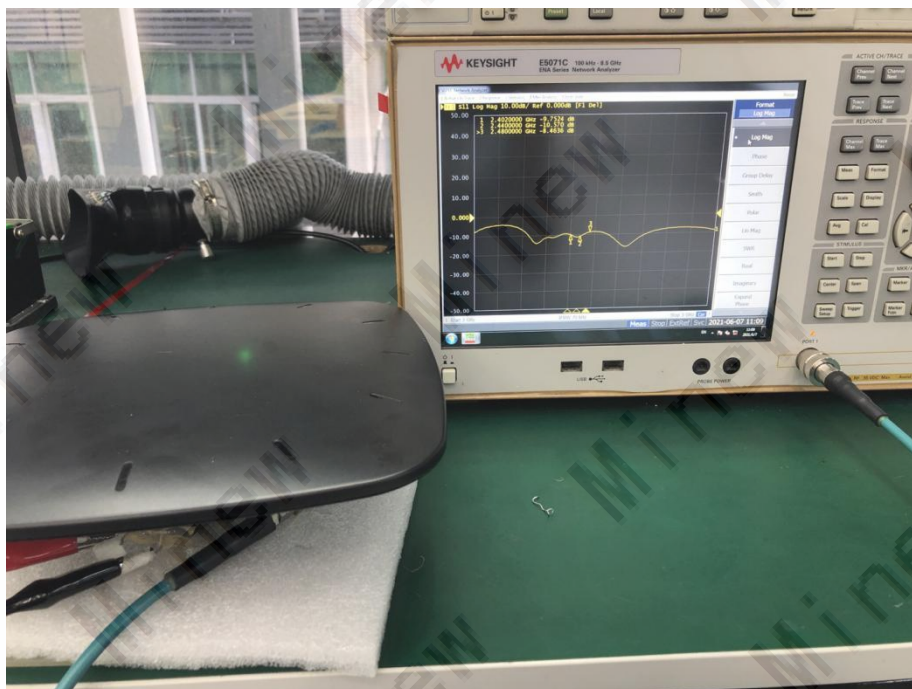
密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-4.92731	-3.636841649
2402000000	-4.88523	
2404000000	-4.59831	
2406000000	-4.45471	
2408000000	-4.46015	
2410000000	-4.43759	
2412000000	-4.34921	
2414000000	-4.09318	
2416000000	-3.99887	
2418000000	-4.04388	
2420000000	-4.10459	
2422000000	-3.98617	
2424000000	-3.81476	
2426000000	-3.79824	
2428000000	-3.83307	
2430000000	-3.86304	
2432000000	-3.75647	
2434000000	-3.63684	
2436000000	-3.66988	
2438000000	-3.77627	
2440000000	-3.88458	
2442000000	-3.83676	
2444000000	-3.8158	
2446000000	-3.89195	
2448000000	-4.00848	
2450000000	-4.10486	
2452000000	-4.07786	
2454000000	-4.05487	
2456000000	-4.10346	
2458000000	-4.2456	
2460000000	-4.35696	
2462000000	-4.28499	
2464000000	-4.19788	
2466000000	-4.20828	
2468000000	-4.3363	
2470000000	-4.4377	
2472000000	-4.38849	
2474000000	-4.3243	
2476000000	-4.37812	
2478000000	-4.53801	
2480000000	-4.62537	

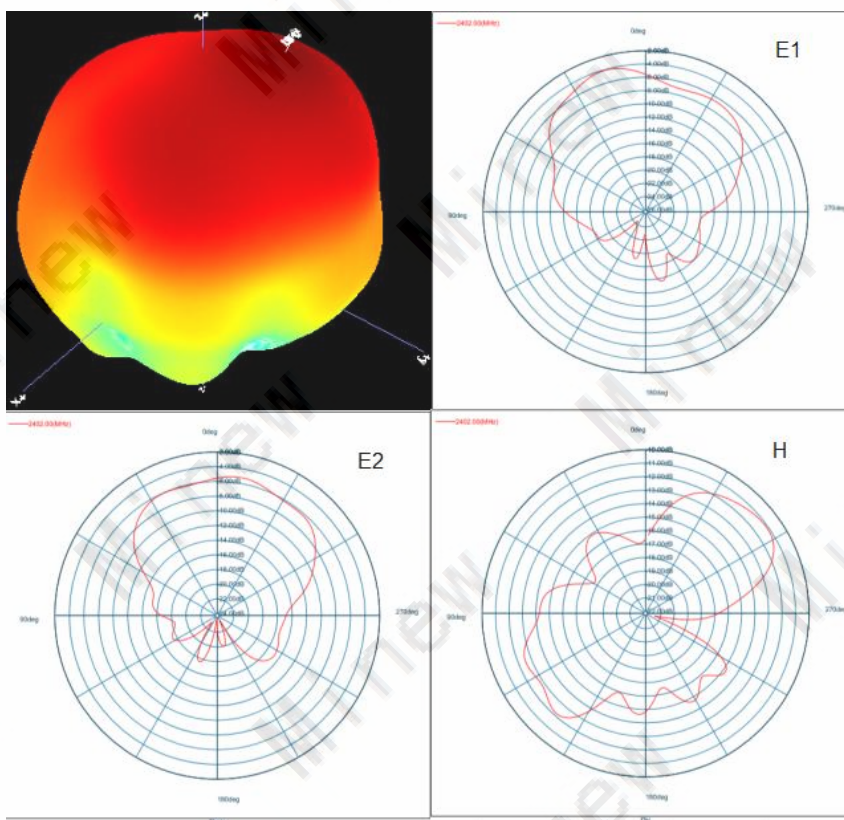
Gain data (Ant11)

3.13 ANT12

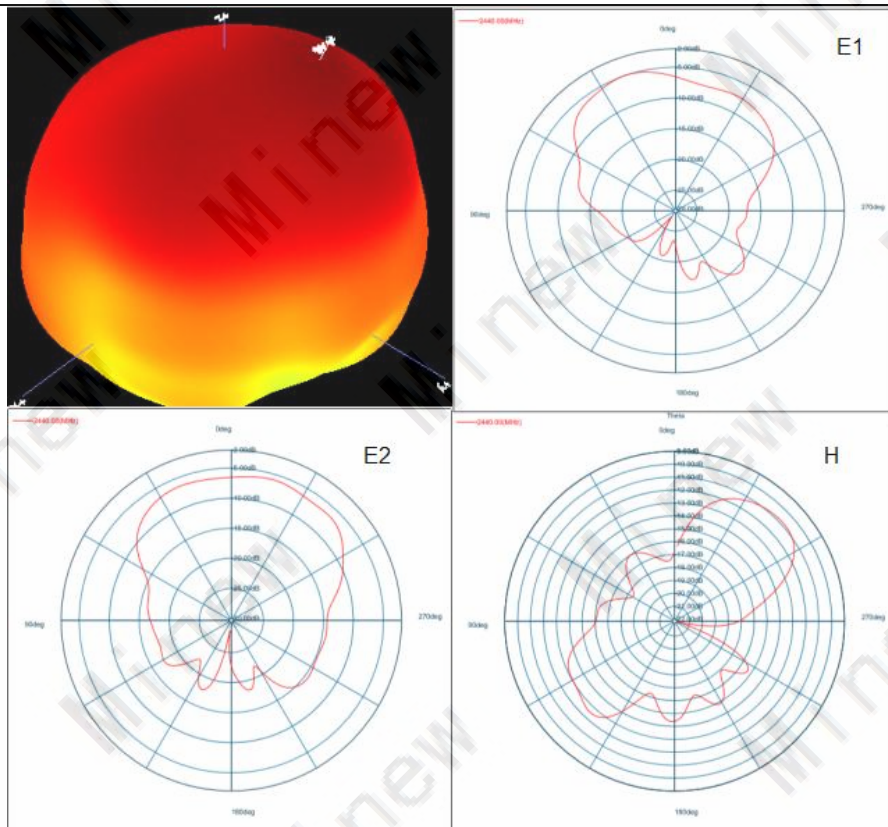
3.13.1 S11



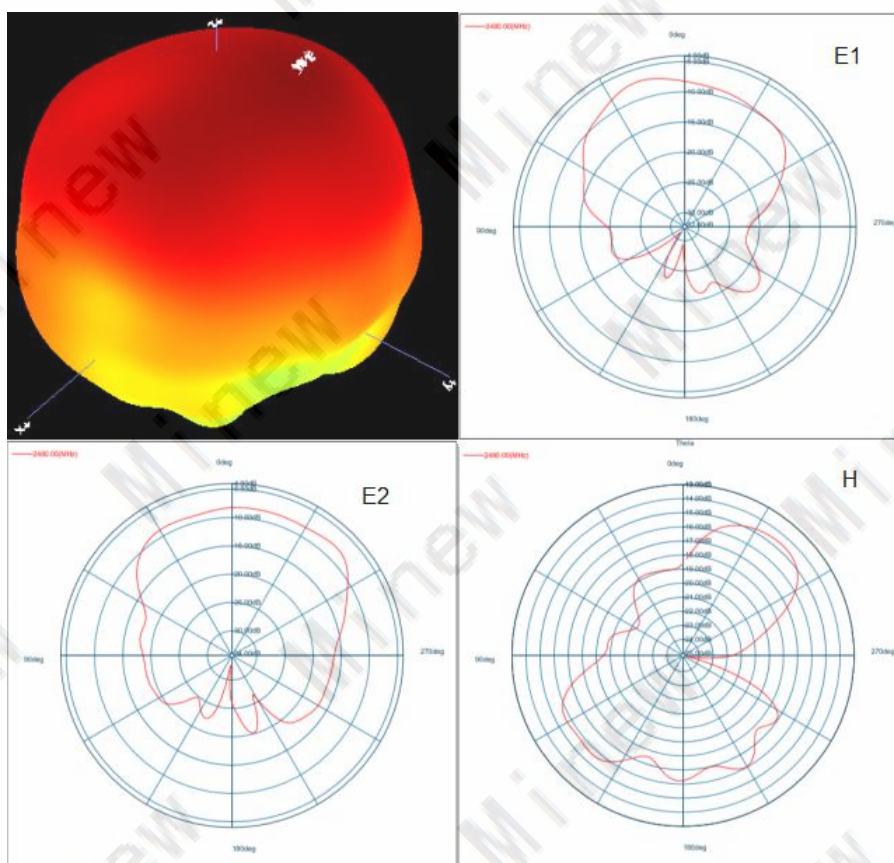
3.13.2 Gain



2402MHz



2440MHz



2480MHz



深圳云里物里科技股份有限公司
产品天线测试报告 (The Antenna Test Report)

Y-YB-CR-115

V001

密级: 绝密 /confidentiality

Frequency	Gain . dB	Peak Gain
2400000000	-3.72088	-3.368665146
2402000000	-3.66788	
2404000000	-3.50148	
2406000000	-3.4435	
2408000000	-3.5483	
2410000000	-3.6056	
2412000000	-3.53255	
2414000000	-3.36867	
2416000000	-3.38106	
2418000000	-3.53256	
2420000000	-3.64331	
2422000000	-3.59815	
2424000000	-3.54374	
2426000000	-3.65471	
2428000000	-3.81255	
2430000000	-3.91009	
2432000000	-3.87464	
2434000000	-3.89116	
2436000000	-4.06426	
2438000000	-4.32199	
2440000000	-4.47989	
2442000000	-4.52744	
2444000000	-4.63909	
2446000000	-4.91111	
2448000000	-5.18178	
2450000000	-5.29654	
2452000000	-5.31665	
2454000000	-5.44218	
2456000000	-5.70516	
2458000000	-5.95555	
2460000000	-6.06507	
2462000000	-6.01962	
2464000000	-6.12001	
2466000000	-6.30684	
2468000000	-6.50284	
2470000000	-6.54923	
2472000000	-6.49356	
2474000000	-6.57821	
2476000000	-6.77486	
2478000000	-7.00155	
2480000000	-7.03745	

Gain data (Ant12)