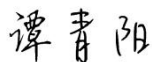


Industrial Internet Innovation Center (Shanghai) Co.,Ltd.**OTA TEST REPORT**

PRODUCT	ESP-Dual Band-Ant A
APPLICANT	ESPRESSIF SYSTEMS (SHANGHAI) CO., LTD
ISSUE DATE	January 8, 2025
STANDARD(S)	IEEE Std 149TM-2008 IEEE Standard Test Procedures for Antennas

Prepared by: *Tan Qingyang*Reviewed by: *Feng Yimin*Approved by: *Zhang Min***CAUTION:**

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1 General Information of The Laboratory

1.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4, No. 766, Jingang Road, Pudong, Shanghai, China
Telephone	021-68866880

1.2 Laboratory Environmental Requirements

Temperature	19℃~25℃
Relative Humidity	35%RH~75%RH

1.3 Project Information

Project Manager	Wei Hanyu
Test Date	December 5, 2024

2 General Information of The Customer

2.1 Applicant

Company	Espressif System (Shanghai) Co.,Ltd
Address	Suite 204 Block 2, 690 Bibo Road, Zhang Jiang Hi-Tech Park,Shanghai, China
Telephone	N/A

2.2 Manufacturer

Company	Espressif System (Shanghai) Co.,Ltd
Address	Suite 204 Block 2, 690 Bibo Road, Zhang Jiang Hi-Tech Park,Shanghai, China
Telephone	N/A

3 General Information of The Product

3.1 Product Description for Equipment under Test (EUT)

Product	ESP-Dual Band-Ant A
Date of Receipt	December 5,2024
EUT ID*	S01
SN/IMEI	N/A
Hardware Version	v1.1
Antenna Type	PCB Antenna
NOTE: EUT ID is the internal identification code of the laboratory.	

4 Test Configuration Information

4.1 Test Equipments Utilized

No.	Name	Model	S/N	Manufacturer	Cal. Date	Cal. Interval
1	AMS 8923	Fully Anechoic Chamber	CT-0001443-1280	ETS-Lindgren	2024-8-22	5 years
2	E5071C	N/A	MY46523563	Keysight	2024-10-11	1 year

5 Test Results

5.1 Max gain

Frequency(GHz)	Max gain(dBi)
2.4/BT	3.62
5.2	3.07
5.3	1.93
5.5	3.43
5.8	2.80

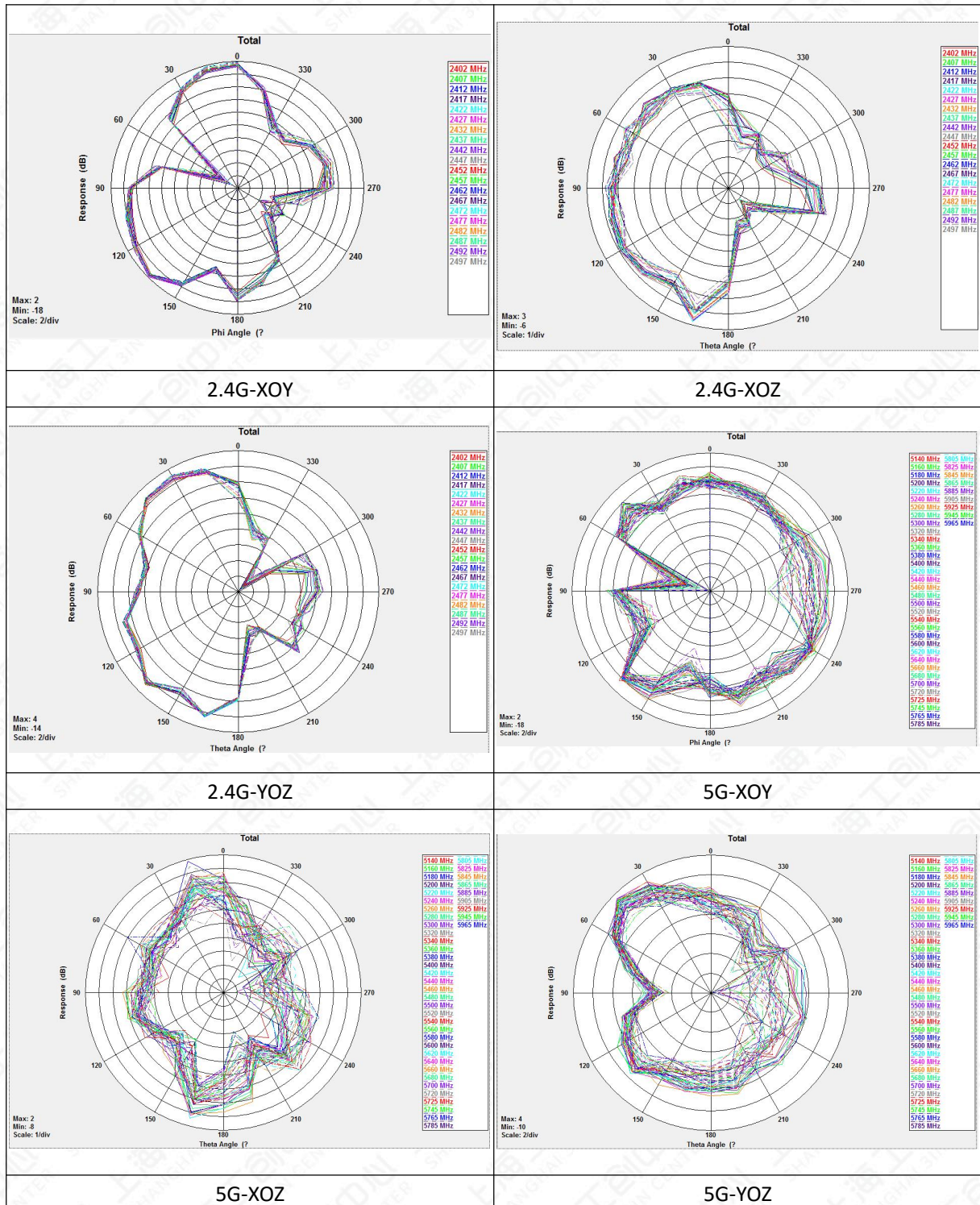
5.2 2.4G/BT

Frequency	Directivity	Efficiency	Efficiency	Gain (dBi)	Test Angle	Max gain(dBi)
2402	5.08	-1.94	64.00	3.14	15°	3.62
2407	5.10	-1.75	66.85	3.35	15°	
2412	5.17	-1.75	66.77	3.41	15°	
2417	5.14	-1.68	67.85	3.46	15°	
2422	5.12	-1.65	68.43	3.47	15°	
2427	5.00	-1.57	69.68	3.43	15°	
2432	4.97	-1.63	68.69	3.34	15°	
2437	4.91	-1.57	69.74	3.35	15°	
2442	4.97	-1.51	70.61	3.46	15°	
2447	4.98	-1.46	71.46	3.52	15°	
2452	5.10	-1.48	71.09	3.62	15°	
2457	5.08	-1.55	69.97	3.53	15°	
2462	5.11	-1.51	70.66	3.60	15°	
2467	5.10	-1.51	70.70	3.59	15°	
2472	5.09	-1.50	70.81	3.59	15°	
2477	4.94	-1.59	69.34	3.35	15°	
2482	4.87	-1.50	70.72	3.37	15°	
2487	4.86	-1.50	70.86	3.36	15°	
2492	4.85	-1.45	71.55	3.39	15°	
2497	4.87	-1.47	71.35	3.40	15°	

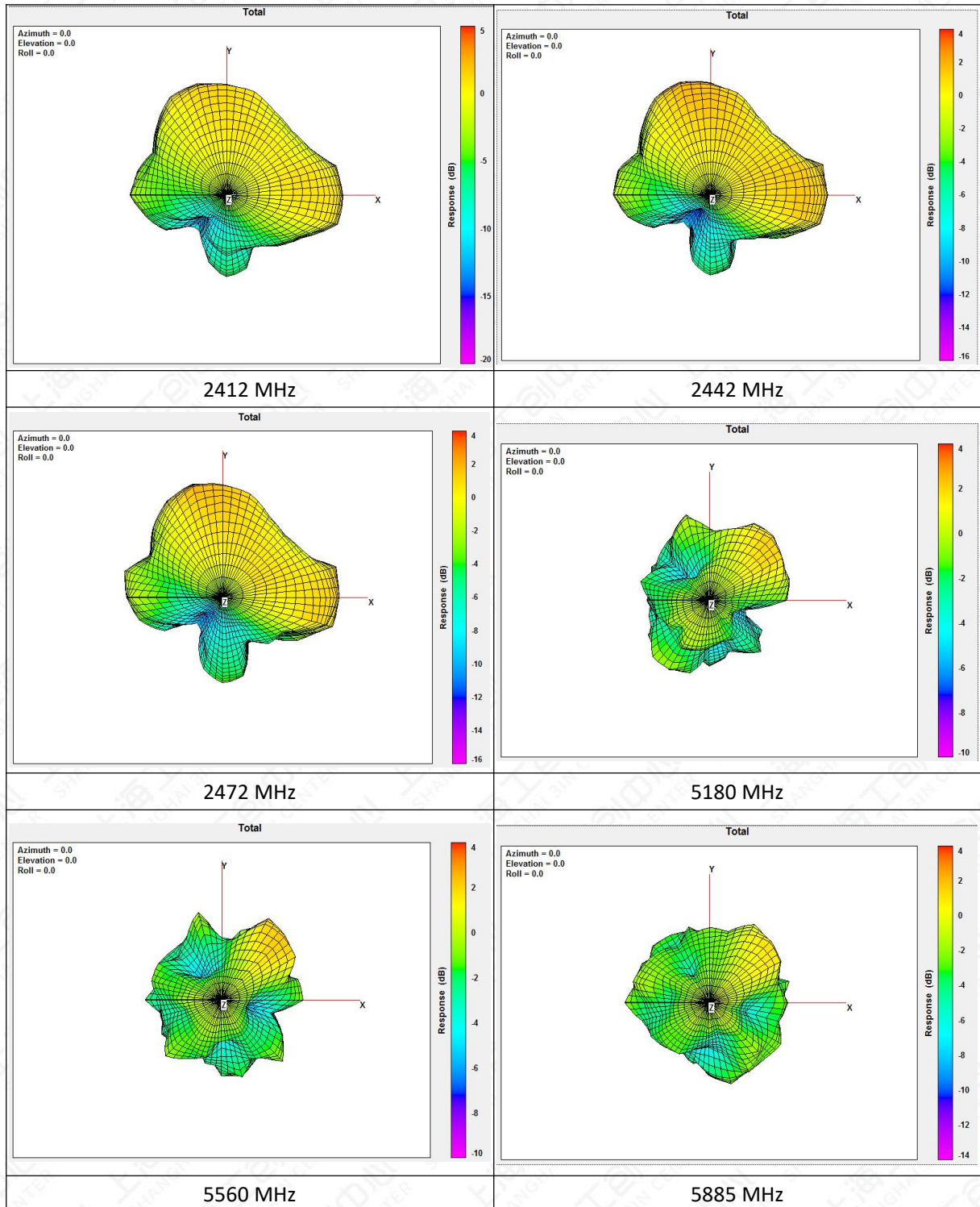
5.3 5G

Frequency	Directivity	Efficiency	Efficiency	Gain (dBi)	Test Angle	Max gain(dBi)
5140	4.20	-2.49	56.35	1.71	15°	N/A
5160	4.57	-2.29	58.99	2.28	15°	N/A
5180	5.13	-2.34	58.39	2.79	15°	3.07
5200	5.50	-2.42	57.23	3.07	15°	
5220	4.96	-2.78	52.70	2.18	15°	
5240	5.18	-3.02	49.91	2.16	15°	
5260	4.65	-3.33	46.45	1.32	15°	
5280	4.73	-3.08	49.15	1.65	15°	1.93
5300	4.66	-2.95	50.66	1.71	15°	
5320	5.01	-3.08	49.24	1.93	15°	
5340	4.93	-3.01	50.03	1.92	15°	N/A
5360	4.63	-2.83	52.09	1.79	15°	N/A
5380	4.36	-3.27	47.05	1.09	15°	N/A
5400	4.12	-2.86	51.75	1.26	15°	N/A
5420	3.94	-2.93	50.92	1.00	15°	N/A
5440	4.02	-3.33	46.50	0.70	15°	N/A
5460	4.11	-3.27	47.05	0.83	15°	N/A
5480	4.32	-3.10	48.94	1.21	15°	N/A
5500	4.77	-3.18	48.07	1.59	15°	3.43
5520	4.68	-3.38	45.87	1.29	15°	
5540	4.30	-3.38	45.97	0.93	15°	
5560	4.72	-2.15	61.00	2.57	15°	
5580	4.19	-2.69	53.78	1.50	15°	
5600	4.89	-2.56	55.50	2.33	15°	
5620	4.89	-2.02	62.83	2.87	15°	
5640	5.26	-1.83	65.60	3.43	15°	
5660	4.83	-2.46	56.73	2.37	15°	
5680	4.76	-2.68	53.99	2.08	15°	
5700	4.66	-2.62	54.65	2.03	15°	
5720	4.42	-2.06	62.23	2.36	15°	
5725	4.36	-2.21	60.16	2.15	15°	2.80
5745	4.96	-2.45	56.92	2.51	15°	
5765	4.87	-2.50	56.27	2.37	15°	
5785	5.30	-2.64	54.48	2.66	15°	
5805	5.77	-2.98	50.39	2.80	15°	
5825	5.30	-3.16	48.31	2.14	15°	N/A
5845	4.57	-3.17	48.22	1.40	15°	
5865	5.74	-3.28	46.98	2.46	15°	
5885	4.44	-3.13	48.69	1.31	15°	
5905	4.88	-2.84	51.99	2.04	15°	
5925	5.40	-2.09	61.85	3.32	15°	N/A
5945	4.45	-2.19	60.45	2.26	15°	N/A
5965	4.53	-2.09	61.85	2.45	15°	N/A

Annex C: Detailed 2D Pattern Plots Results



Annex D: Detailed 3D Pattern Plots Results



Annex D: Revised History

Version	Revised Content
V1	Update 2D Pattern Plots Results Delete Model

END OF REPORT