

Shenzhen HX Antenna Co., Ltd.

SPECIFICATION FOR APPROVAL

Name of the company : _____

Name of an article : 2.4G 5.8G Dual-frequency antenna

Material code : HX-AP25-1089-D2

Customer item number: _____

Specifications : See the specification

Date : 2026-06-06

Customer countersignature:

Department of Engin eering	Quality department	Approve

Shen zhen hongxin technology electronics Co.Ltd:

Department of Engin eering	Quality department	Approve
Huang Xiaoyu	Zhang Huan	Lu Shan Mei

一：Antenna parameter

Design Specifications	Typical	Units
天线形式(Antenna form)	antenna	
工作频率 (working Frequency)	2400-2500/5000-5800	MHZ
增益(Gain)	refer below	DBi
天线效率 (Antenna efficiency)	35~80	%
电压驻波比 (VSWR)	<1.8	
极化方式 (Polarization)	vertical polarization	
辐射方向 (Radiation pattern)	in all directions	
馈电阻抗 (impedance)	50	ohm
功率容量 (Power handling)	33	dbm
天线接口 (Interface)	SMA Internal screw needle	
天线尺寸 (Antenna size)	108*9	mm
重量 (Weight)	No requirement	
工作温度 (Operating Temp)	-30-70	°C
储存温度 (Storing Temp)	-30-70	°C

二: Antenna physical diagram



Fill:

1. The antenna parameters are tested according to the simulated environment, and there will be performance deviations for different products.
2. The function of the antenna is sensitive. Please inform us to evaluate if there is any change in the peripheral structure of the main body.

三、VSWR（电压驻波比）/Return Loss（回波损耗）



四: Passive data

2. 4G

Frequency ID	1	2	3	4	5	6	7	8	9	10
Frequency (MHz)	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445
Efficiency (dBi)	-3.48	-3.75	-3.58	-3.23	-3.18	-3.23	-3.17	-2.99	-2.78	-2.85
Gain (dBi)	0.55	0.19	0.26	0.57	0.60	0.53	0.61	0.78	1.01	0.92
Efficiency (%)	44.82	42.20	43.84	47.55	48.07	47.49	48.17	50.25	52.70	51.91
Directivity (dB)	4.03	3.94	3.84	3.79	3.78	3.77	3.79	3.77	3.79	3.77
Peak Gain Position (Theta)	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
Peak Gain Position (Phi)	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00
Efficiency ThetaPol (%)	40.96	38.72	40.41	44.00	44.66	44.28	45.07	47.19	49.63	49.00
Efficiency PhiPol (%)	3.86	3.48	3.43	3.55	3.42	3.21	3.10	3.07	3.07	2.91
Upper Hem. Efficiency (%)	28.23	26.59	27.62	29.92	30.16	29.65	29.90	30.98	32.25	31.59
Lower Hem. Efficiency (%)	16.59	15.61	16.22	17.64	17.91	17.84	18.27	19.27	20.45	20.32

Frequency ID	11	12	13	14	15	16	17	18	19	20	21
Frequency (MHz)	2450	2455	2460	2465	2470	2475	2480	2485	2490	2495	2500
Efficiency (dBi)	-2.89	-2.58	-2.41	-2.55	-2.48	-2.33	-2.32	-2.28	-2.15	-2.02	-1.97
Gain (dBi)	0.85	1.12	1.29	1.13	1.13	1.21	1.14	1.13	1.22	1.29	1.32
Efficiency (%)	51.35	55.16	57.42	55.59	56.47	58.47	58.61	59.20	61.00	62.77	63.49
Directivity (dB)	3.74	3.70	3.70	3.68	3.61	3.54	3.46	3.40	3.37	3.31	3.29
Peak Gain Position (Theta)	90.00	90.00	75.00	75.00	75.00	75.00	75.00	90.00	90.00	90.00	90.00
Peak Gain Position (Phi)	135.00	135.00	75.00	75.00	75.00	75.00	75.00	135.00	135.00	135.00	135.00
Efficiency ThetaPol (%)	48.59	52.29	54.50	52.82	53.69	55.62	55.80	56.39	58.14	59.90	60.67
Efficiency PhiPol (%)	2.77	2.87	2.92	2.77	2.78	2.85	2.81	2.82	2.86	2.87	2.82
Upper Hem. Efficiency (%)	31.11	33.35	34.69	33.61	34.18	35.40	35.47	35.75	36.69	37.59	37.80
Lower Hem. Efficiency (%)	20.25	21.81	22.73	21.98	22.29	23.07	23.14	23.45	24.31	25.18	25.69

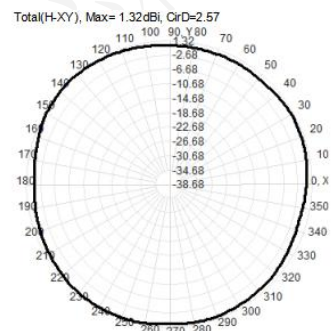
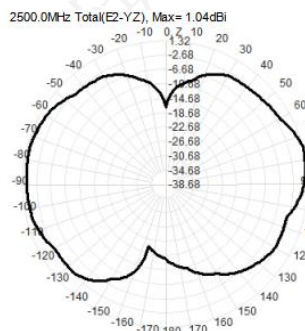
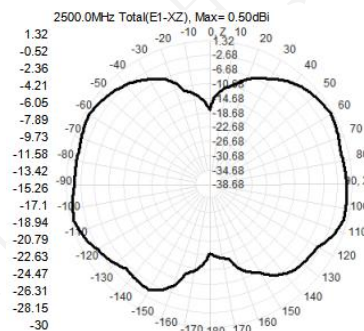
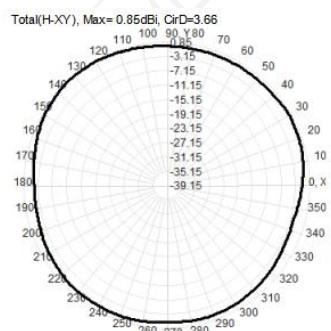
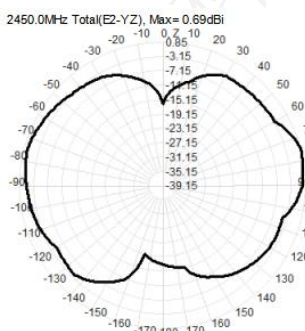
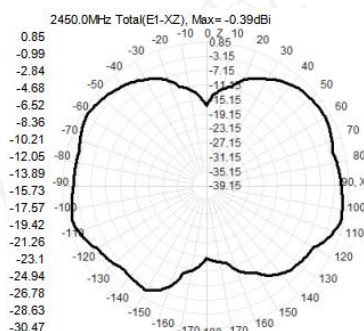
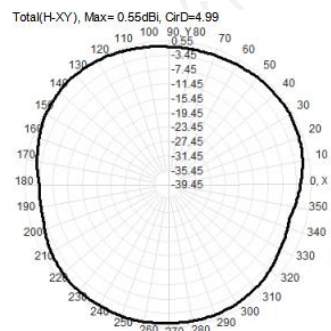
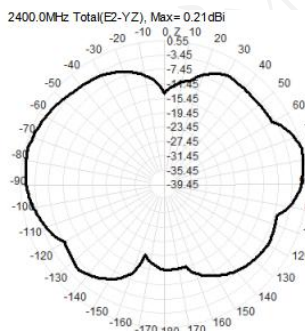
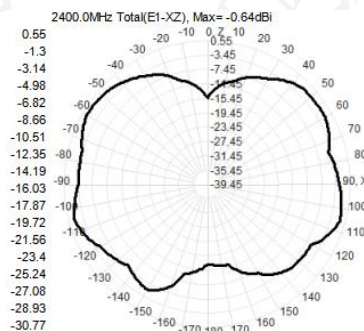
5. 8G

Frequency ID	22	25	28	31	34	37	40	43	46	49	52	55	56	59	62
Frequency (MHz)	5000	5030	5060	5090	5120	5150	5180	5210	5240	5270	5300	5330	5340	5370	5400
Efficiency (dBi)	-3.19	-2.76	-2.68	-2.69	-2.50	-2.58	-2.65	-2.67	-2.89	-2.78	-2.94	-3.35	-3.53	-3.63	-3.71
Gain (dBi)	2.04	2.82	2.75	2.70	2.95	2.80	2.92	3.03	2.90	3.00	2.68	2.02	1.81	1.50	1.33
Efficiency (%)	48.00	52.99	53.90	53.89	56.25	55.21	54.28	54.04	51.43	52.69	50.82	46.23	44.35	43.36	42.59
Directivity (dB)	5.22	5.58	5.43	5.38	5.45	5.38	5.57	5.70	5.78	5.78	5.62	5.37	5.34	5.13	5.03
Peak Gain Position (Theta)	75.00	75.00	75.00	75.00	75.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
Peak Gain Position (Phi)	75.00	75.00	75.00	75.00	60.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	135.00
Efficiency ThetaPol (%)	44.37	49.24	50.10	50.21	52.45	51.56	50.58	50.49	47.92	49.25	47.55	43.35	41.49	40.81	40.06
Efficiency PhiPol (%)	3.63	3.75	3.79	3.68	3.80	3.65	3.69	3.55	3.51	3.44	3.27	2.88	2.86	2.55	2.54
Upper Hem. Efficiency (%)	27.77	31.16	31.38	31.41	32.63	31.51	30.68	30.12	28.01	28.51	27.27	24.61	23.58	23.31	23.23
Lower Hem. Efficiency (%)	20.23	21.83	22.51	22.47	23.62	23.70	23.60	23.92	23.42	24.18	23.55	21.62	20.76	20.05	19.36

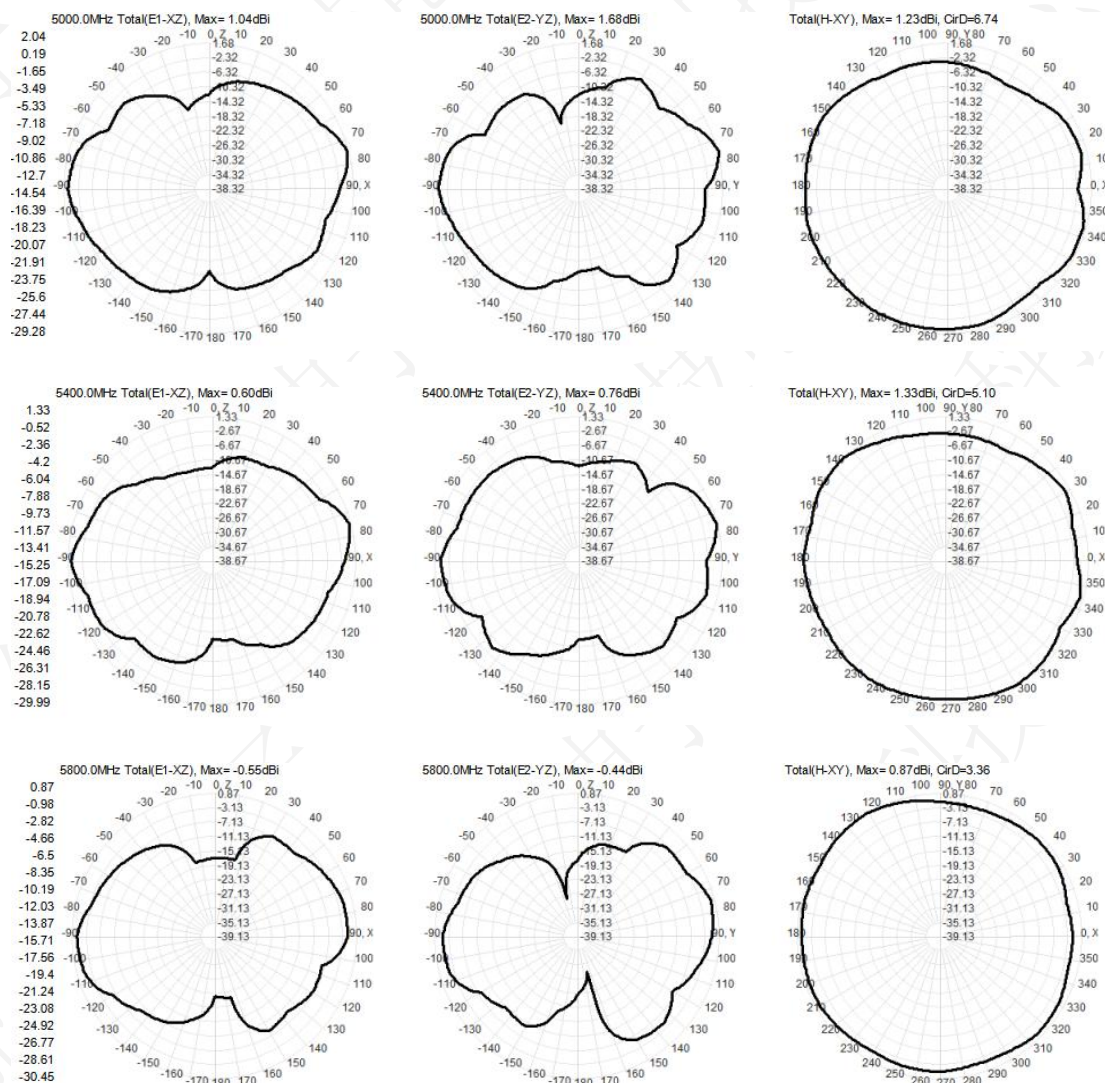
Frequency ID	65	68	71	74	77	80	83	86	89	92	95	98	101	102
Frequency (MHz)	5430	5460	5490	5520	5550	5580	5610	5640	5670	5700	5730	5760	5790	5800
Efficiency (dBi)	-3.52	-3.66	-4.10	-4.60	-4.58	-4.64	-4.57	-5.00	-5.49	-5.78	-5.18	-4.82	-4.59	-4.68
Gain (dBi)	1.46	1.43	0.97	0.61	0.72	0.81	1.00	0.59	0.13	-0.12	0.46	0.75	0.96	0.87
Efficiency (%)	44.45	43.05	38.89	34.67	34.85	34.33	34.89	31.60	28.25	26.43	30.32	32.94	34.76	34.01
Directivity (dB)	4.99	5.09	5.07	5.21	5.30	5.45	5.58	5.60	5.62	5.66	5.64	5.58	5.55	5.55
Peak Gain Position (Theta)	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
Peak Gain Position (Phi)	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	135.00	120.00	120.00	120.00
Efficiency ThetaPol (%)	42.00	40.70	36.91	32.99	33.25	32.83	33.42	30.30	27.13	25.42	29.16	31.68	33.40	32.64
Efficiency PhiPol (%)	2.45	2.35	1.98	1.68	1.60	1.50	1.46	1.30	1.12	1.01	1.16	1.26	1.36	1.37
Upper Hem. Efficiency (%)	24.56	24.30	22.19	19.96	20.25	19.88	20.00	17.96	15.93	14.76	16.93	18.44	19.42	19.00
Lower Hem. Efficiency (%)	19.89	18.74	16.70	14.71	14.60	14.45	14.89	13.64	12.32	11.67	13.39	14.50	15.34	15.01

五: Antenna direction diagram:

2.4G



5.8G

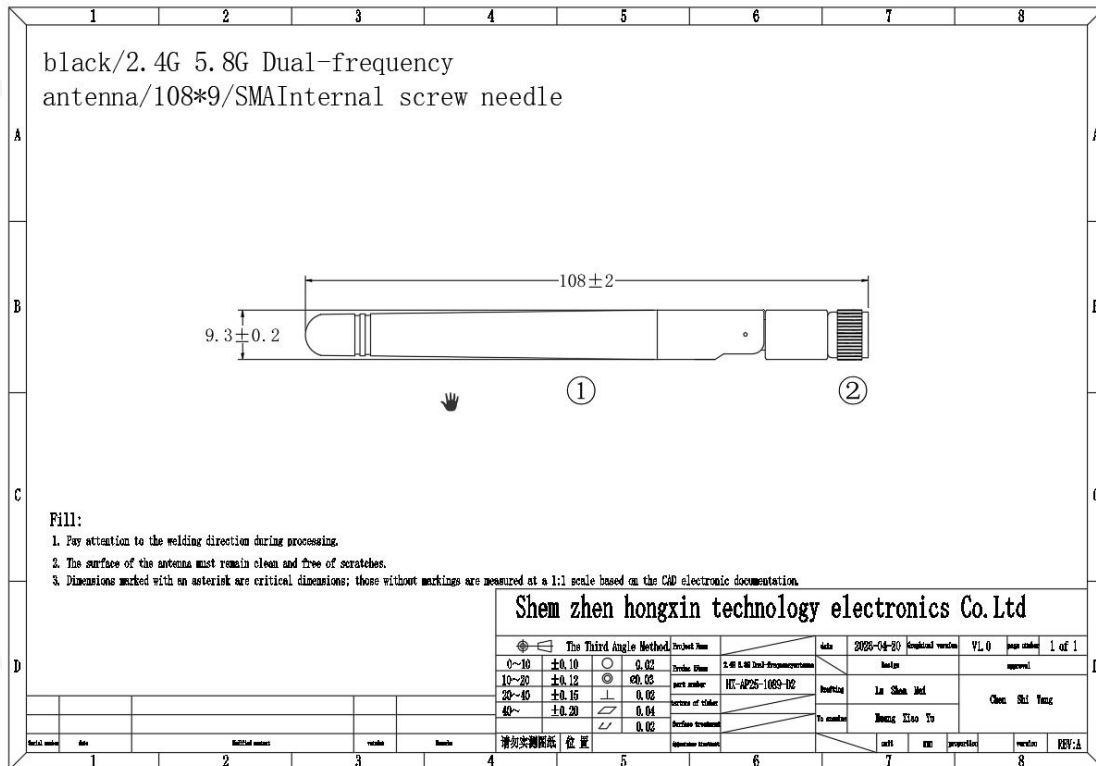


六: Storage environment

Working temperature: -30 to 70°C

reserve temperature: -30 to 70°C

七: Dimensions



八: Note

1. Avoid applying excessive mechanical stress to product components. Do not attempt to bend or disassemble and reassemble the product, as this can cause damage.
This can result in damage to product components or parts.
2. The product should not be exposed directly to open flames.
3. This specification applies solely to the functionality of the HX-AP25-1089-D2 product as a standalone unit.