

SPECIFICATION FOR APPROVALS

CUSTOMER: HKC

CUS PARTNO: 260504003720

PARTNAME: WIFI antenna

TPTPART NO: WWXL6009190

Version: 1.0

CUS STAMP:

DATE:

Purchasing Dept	Engineering Dept	Approval

WWXL:

Date: November 03, 2022

Engineering Dept	Sales Dept	Approval
Hongbo Dai		Xianyan Tong

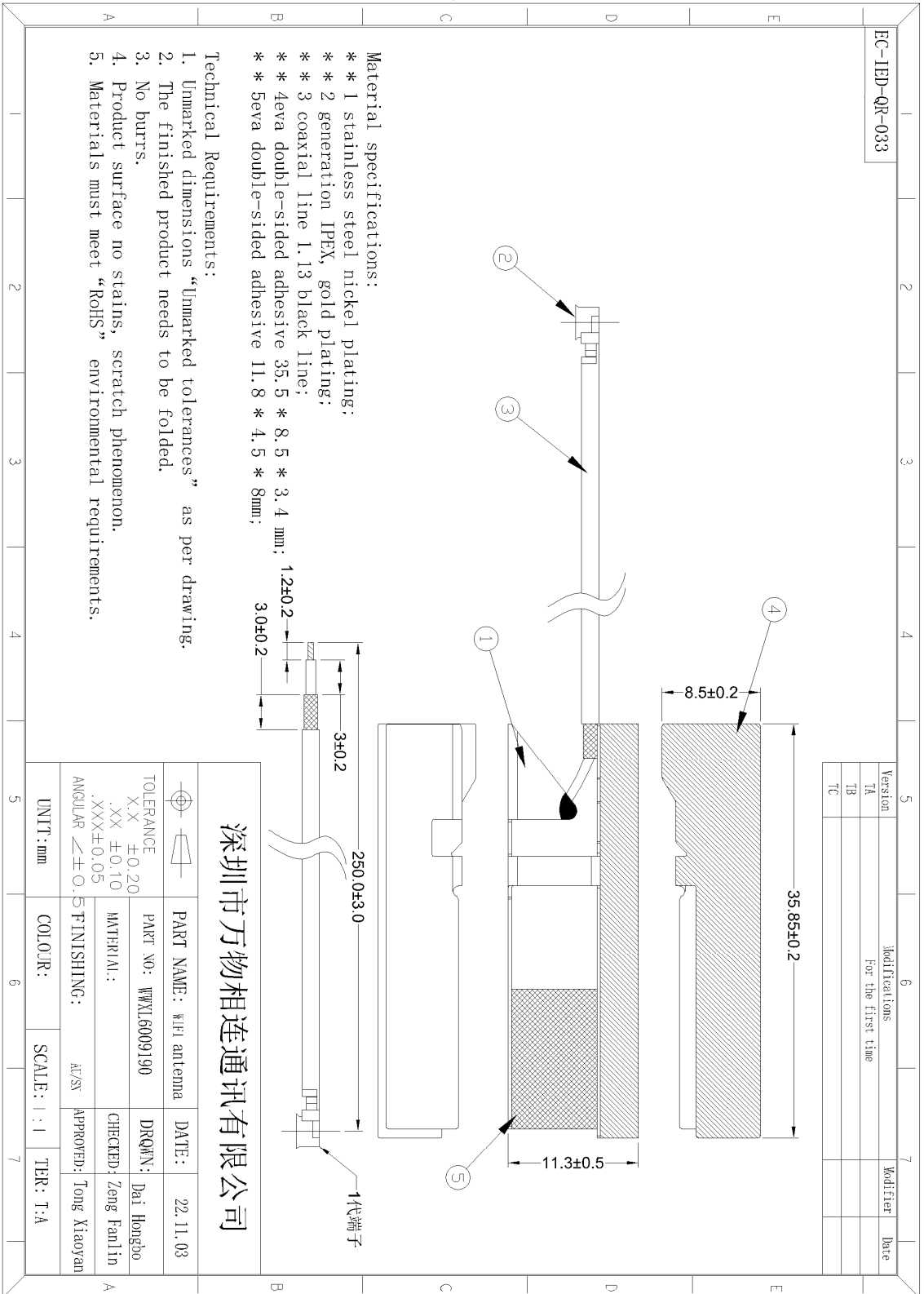
Please return one specification or one copy of it with your chop and signature of approval and retain the others for your record. In the event of an order being placed for this part number before the chop and signed with specification (or copy) is returned and without special explanation, it will be assumed that full approval have been given.

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1、Drawing

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万物相连 深圳 Autodesk 甲

2、Product pictures



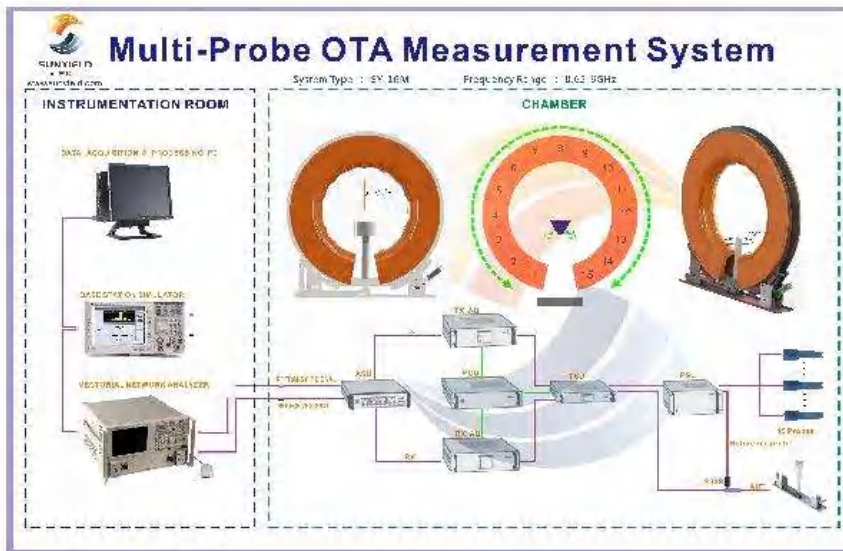
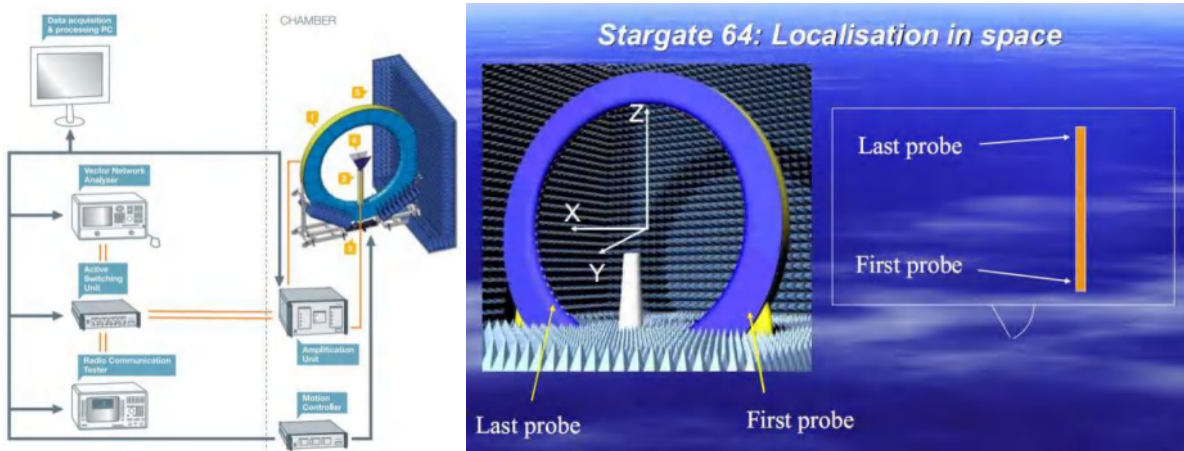
3、Parts list

No.	Name of material	Material Code	Name of material
1	Stainless steel	WWXLTP168	35.85*8.5*8mm
2	RF terminal	WWXL I-PX001-1	1.13 terminals
3	Coaxial cable	WWXLGCX024	1.13 black, L=250mm
4	Eva double-sided Glue	WWXLSTMJ229	35.5*8.5*3.4
5	Eva double-sided Glue	WWXLSTMJ230	11.8*4.5*8

4、Test parameters

Name WIFI antenna (WWXL6009190)		ModelType	
ELECTRICAL SPECTFICATIONS		MECHANICAL SPECTFICATIONS	
FrenquencyRange 2400-2500/5150-5850MHz		Dimensions	35.85*8.5*11.3mm
Bandwidth	100/700MHz	Connector	IPEX
Impedance	50 Ω	Radome Material	Stainless steel
VSWR	≤3.5	Radome Color	Nickel plating
Gain	3.86/4.74dBi	Coaxial-cable	1.13black, L=250mm
Polarization	linear Vertical	WorkingTemperature	-45°C-+80°C
Radiation	Omnidirectional	Limit Temperature	-45°C-+80°C
Power	50W		

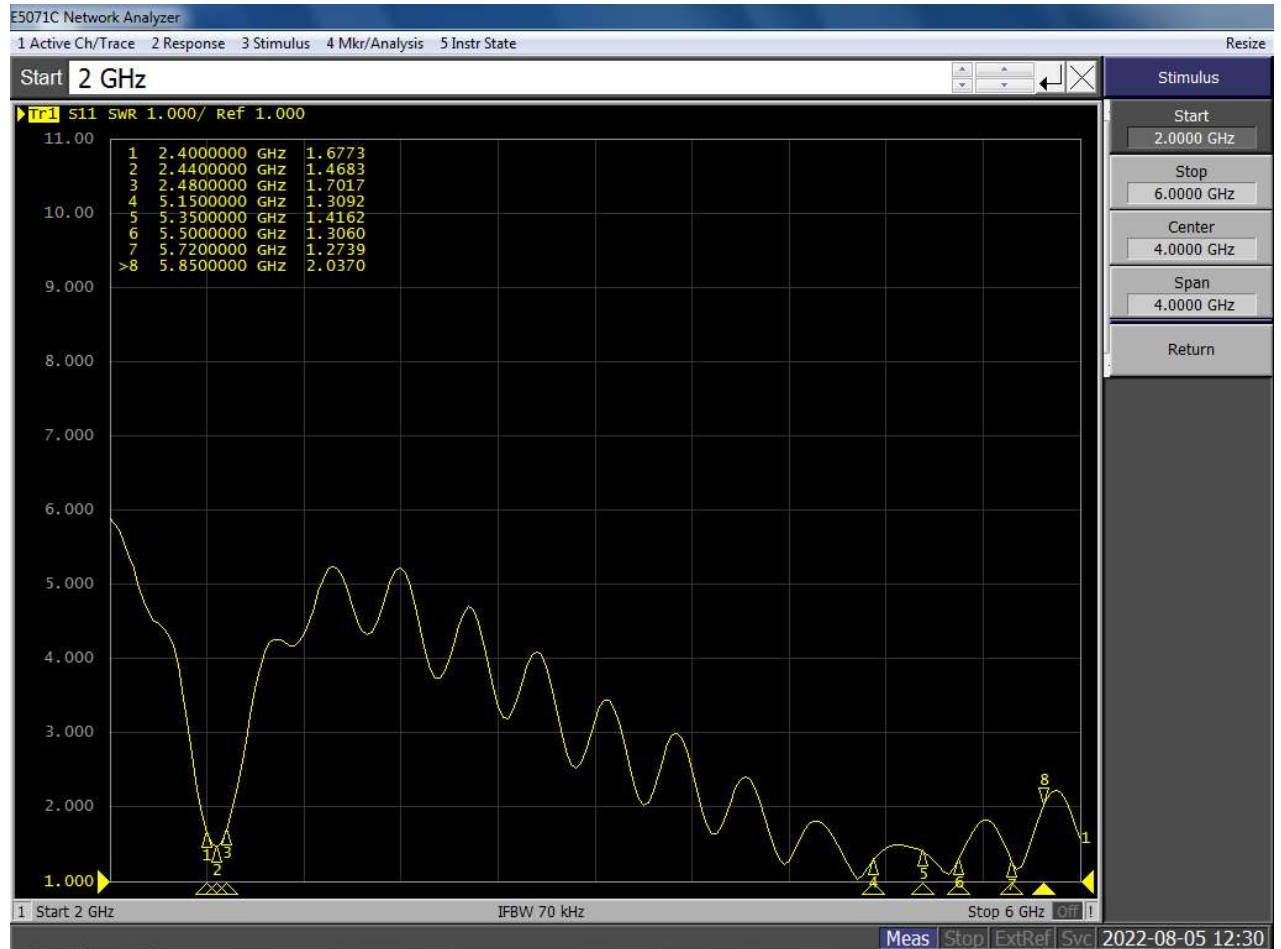
5、Antenna test environment



test macro:	SY-16M Antenna measurement system
testing environment:	Temperature 22°C ±3°C, humidity 50% ±15%
testing equipment:	Agilent 5071C Agilent 8960 Comprehensive measuring instrument Agilent CMW500 4G Comprehensive measuring instrument

6、Antenna Passive Parameters:

1、VSWR:



Frequency (MHz)	2400	2440	2480	5150	5350	5500	5720	5850
VSWR	1.67	1.46	1.70	1.30	1.41	1.30	1.27	2.03

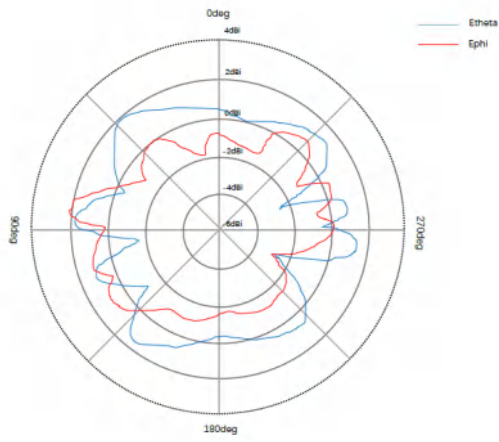
2. Gain and Efficiency: (The whole machine tests the antenna)

Gain&Efficiency&PhaseCenter 增益、效率和相位中心								
frequency	gain	efficiency	frequency	gain	efficiency	frequency	gain	efficiency
频率 (MHz)	增益 (dBi)	效率 (%)	频率 (MHz)	增益 (dBi)	效率 (%)	频率 (MHz)	增益 (dBi)	效率 (%)
2400	3.62	44.57	5150	3	30.39	5510	4.45	30.89
2410	3.73	43.55	5160	3.25	31.77	5520	4.39	30.53
2420	3.72	45.86	5170	3.27	31.86	5530	4.35	30.55
2430	3.86	44.46	5180	3.3	32.09	5540	4.34	31.21
2440	3.73	45.83	5190	3.31	32.54	5550	4.33	31.78
2450	3.64	47.89	5200	3.17	31.98	5560	4.3	31.95

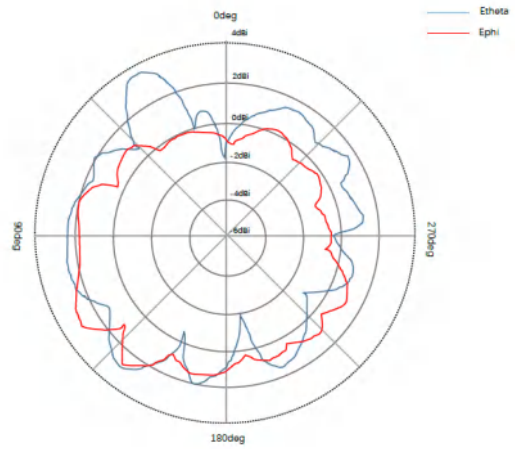
2460	3.64	48.56	5210	3.1	32.02	5570	4.43	33.11
2470	3.5	46.23	5220	2.99	31.55	5580	4.4	33.66
2480	3.31	48.76	5230	3.06	32.44	5590	4.49	34.06
2490	3.2	47.93	5240	3.07	32.2	5600	4.48	34.57
2500	2.93	46.88	5250	3.14	32.29	5610	4.74	35.69
			5260	3.2	31.88	5620	4.69	35.46
			5270	3.28	31.45	5630	4.69	35.39
			5280	3.33	30.82	5640	4.66	35.17
			5290	3.3	29.91	5650	4.54	34.6
			5300	3.07	28.08	5660	4.63	33.2
			5310	3.11	28.22	5670	4.5	31.84
			5320	3.04	27.71	5680	4.5	31.18
			5330	2.87	26.51	5690	4.47	30.51
			5340	2.88	26.3	5700	4.38	29.53
			5350	2.97	26.23	5710	4.34	29.06
			5360	3.01	25.91	5720	4.37	29.26
			5370	3.12	26.07	5730	4.19	28.17
			5380	3.27	26.55	5740	4	27.12
			5390	3.39	27.28	5750	3.79	25.89
			5400	3.64	28.92	5760	3.55	24.55
			5410	3.75	29.86	5770	3.36	23.39
			5420	3.88	30.96	5780	3.39	23.34
			5430	3.97	31.79	5790	3.47	23.53
			5440	4.09	32.48	5800	3.69	24.5
			5450	4.04	31.88	5810	3.83	24.95
			5460	4.15	32	5820	3.97	25.5
			5470	4.24	31.98	5830	3.94	25.2
			5480	4.3	31.59	5840	3.82	24.36
			5490	4.36	31.28	5850	3.57	23.07
			5500	4.45	31.21			

3. directional diagram

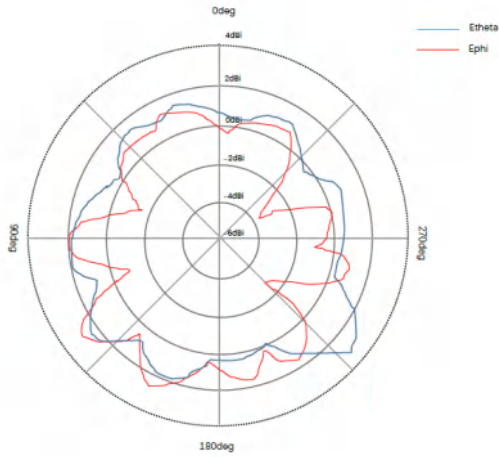
Theta=90 freq=2400MHz



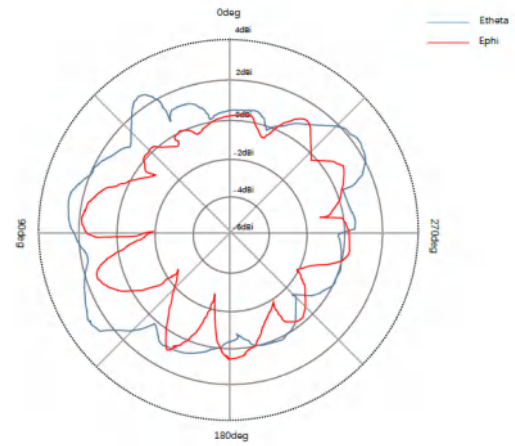
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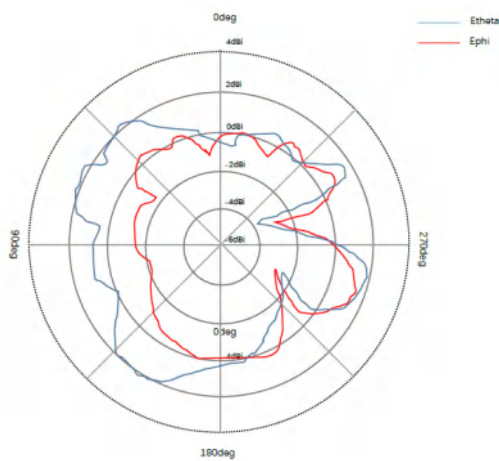
Theta=90 freq=2450MHz



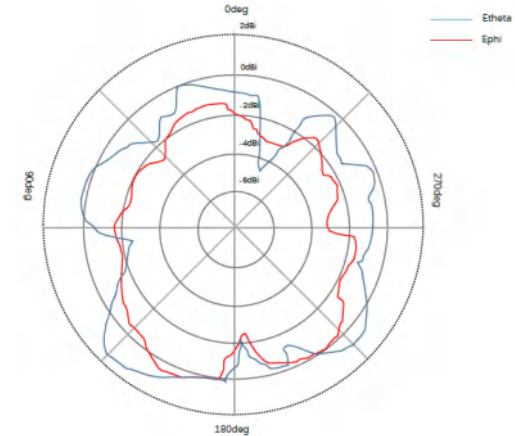
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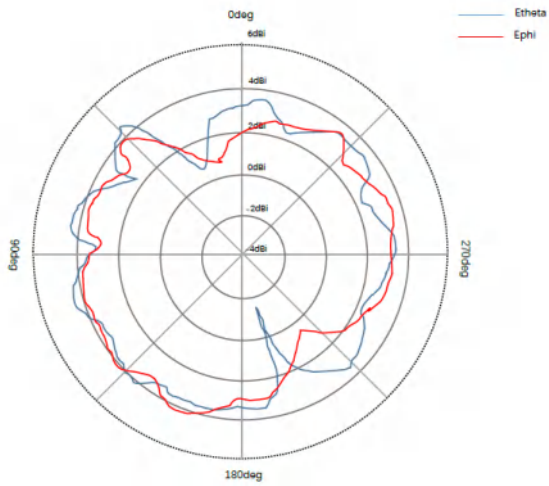
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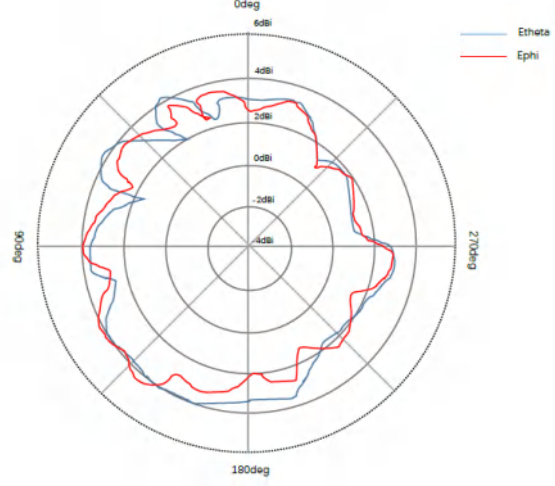
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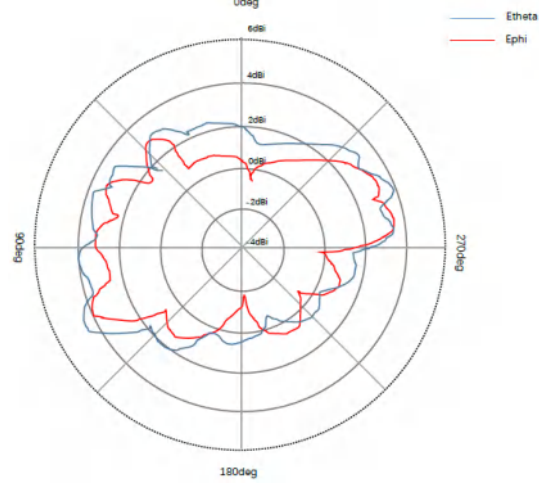
Theta=90 freq=5150MHz



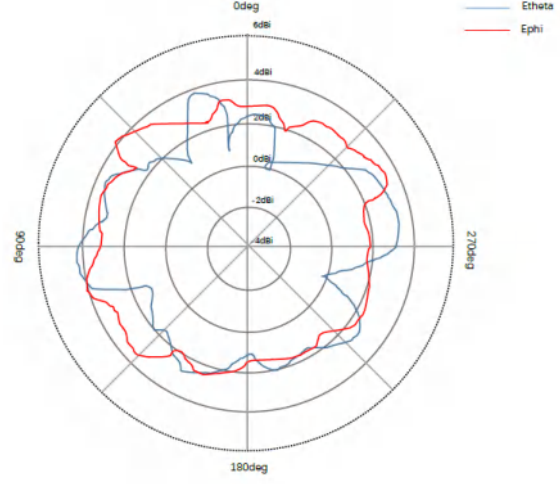
Phi=90 freq=5150MHz



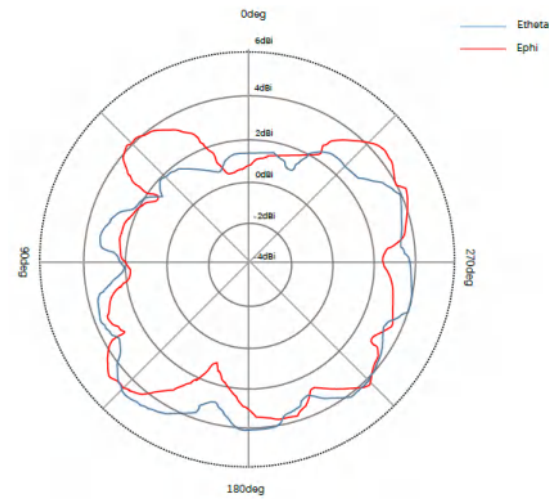
Theta=90 freq=5350MHz



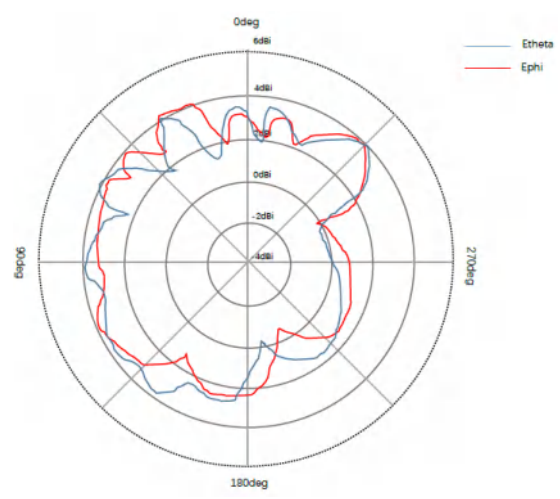
Phi=90 freq=5350MHz



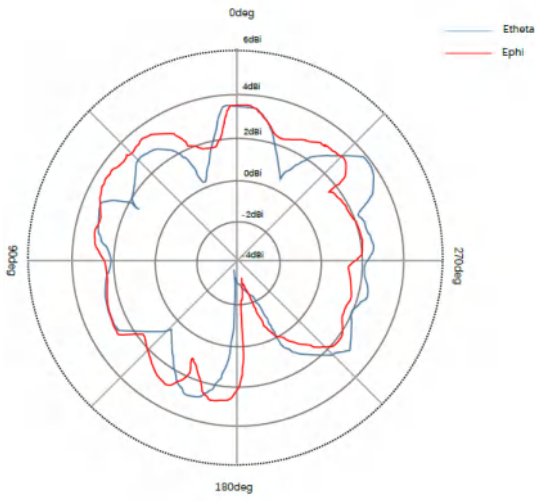
Theta=90 freq=5500MHz



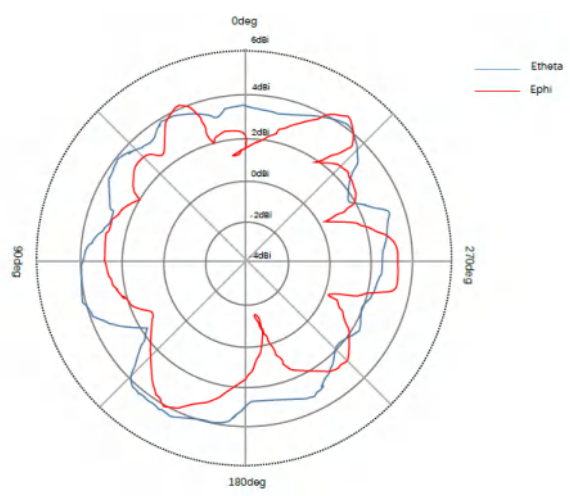
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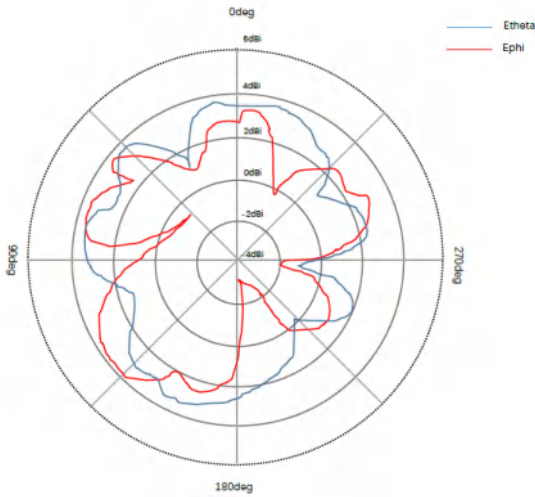
Theta=90 freq=5720MHz



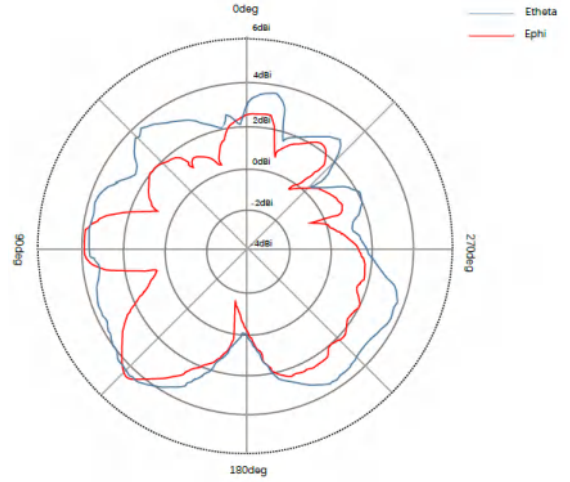
Phi=90 freq=5720MHz



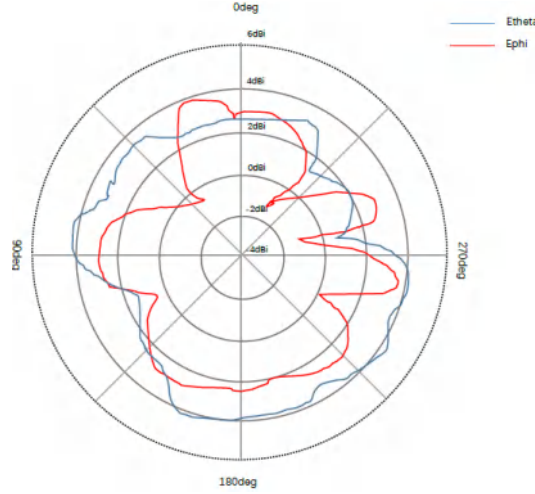
Theta=90 freq=5800MHz



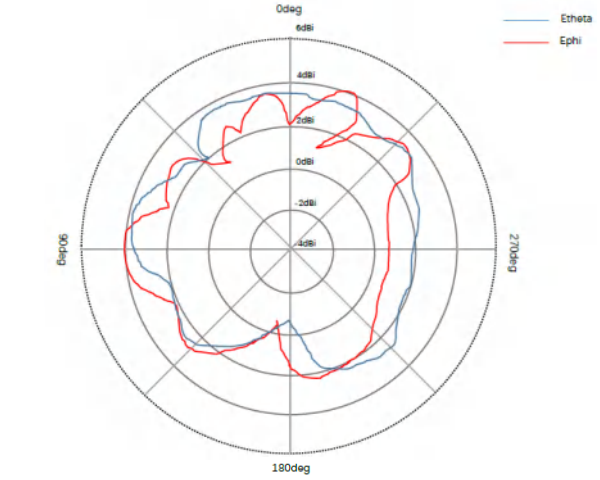
Phi=90 freq=5800MHz



Theta=90 freq=5850MHz



Phi=90 freq=5850MHz



4. Active testing of WIFI antennas

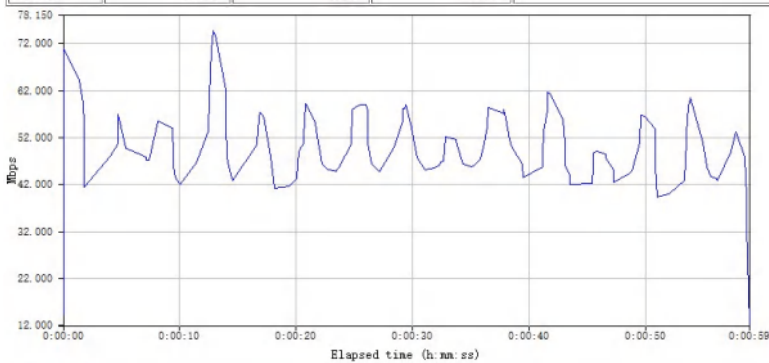
Active Measurement Report												
Manufacturer		Model			WIFI_G			Export Time 2022/3/30 星期三 12:07:35				
Item	Tester	Measurement	Azimuths	Elevations	Standard	Band	Channel	Frequency	MaxValue	Total	Test time	End time
1	Cmw500	TRP	Every30	AllProbes	WIFI_G	G_6M	1	2412	22.54	15.19	3' 20"	2022/3/30 星期三 11:46:52
2	Cmw500	TRP	Every30	AllProbes	WIFI_G	G_6M	6	2437	22.73	15.23	3' 21"	2022/3/30 星期三 11:51:50
3	Cmw500	TRP	Every30	AllProbes	WIFI_G	G_6M	13	2472	23.47	15.1	3' 19"	2022/3/30 星期三 11:57:18
4	Cmw500	TIS with EIRP	Every30	AllProbes	WIFI_G	G_54M	1	2412	72.11	58.37	2' 13"	2022/3/30 星期三 12:00:45
5	Cmw500	TIS with EIRP	Every30	AllProbes	WIFI_G	G_54M	6	2437	71.8	60.91	2' 17"	2022/3/30 星期三 12:03:51
6	Cmw500	TIS with EIRP	Every30	AllProbes	WIFI_G	G_54M	13	2472	74.91	67.58	1' 56"	2022/3/30 星期三 12:06:33

Active Measurement Report												
Manufacturer		Model			WIFI_A			Export Time 2022/3/30 星期三 13:51:03				
Item	Tester	Measurement	Azimuths	Elevations	Standard	Band	Channel	Frequency	MaxValue	Total	Test time	End time
1	Cmw500	TRP	Every30	AllProbes	WIFI_A	A_6M	36	5180	26.99	17.36	3' 9"	2022/3/30 星期三 12:12:44
2	Cmw500	TRP	Every30	AllProbes	WIFI_A	A_6M	100	5500	24.92	15.6	41' 6"	2022/3/30 星期三 13:07:18
3	Cmw500	TRP	Every30	AllProbes	WIFI_A	A_6M	165	5825	22.63	13.23	20' 51"	2022/3/30 星期三 13:41:37
4	Cmw500	TIS with EIRP	Every30	AllProbes	WIFI_A	A_54M	36	5180	87.65	77.65	2' 1"	2022/3/30 星期三 13:44:30
5	Cmw500	TIS with EIRP	Every30	AllProbes	WIFI_A	A_54M	100	5500	85.47	76.37	2' 1"	2022/3/30 星期三 13:47:31
6	Cmw500	TIS with EIRP	Every30	AllProbes	WIFI_A	A_54M	165	5825	84.51	74.88	2' 0"	2022/3/30 星期三 13:50:23

5. Throughput Test

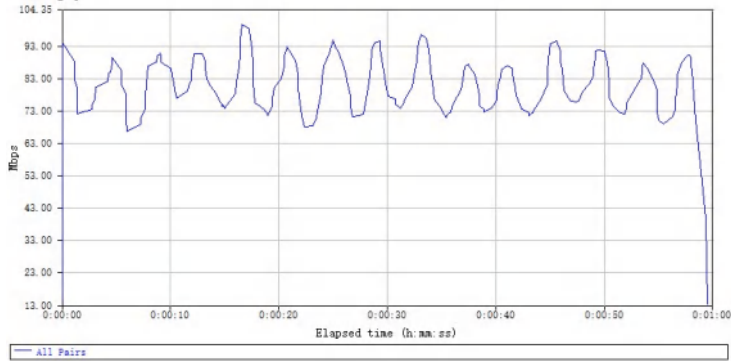
2G frequency 11 channel TX

Group/ Pair	Average (Mbps)	Minimum (Mbps)	Maximum (Mbps)	Throughput 95% Confidence Interval	Measured Time (secs)	Relative Precision
All Pairs	49.104	5.501	18.762			
Pair 1	8.865	6.572	18.762	0.987	58.656	11.128
Pair 2	7.157	5.811	13.550	0.613	58.683	8.570
Pair 3	10.199	6.408	16.639	1.029	58.832	10.088
Pair 4	7.126	5.726	13.055	0.614	58.938	8.619
Pair 5	6.492	5.501	11.261	0.460	58.532	7.085
Pair 6	9.756	6.487	15.140	0.927	59.452	9.505
Totals:	49.104	5.501	18.762			



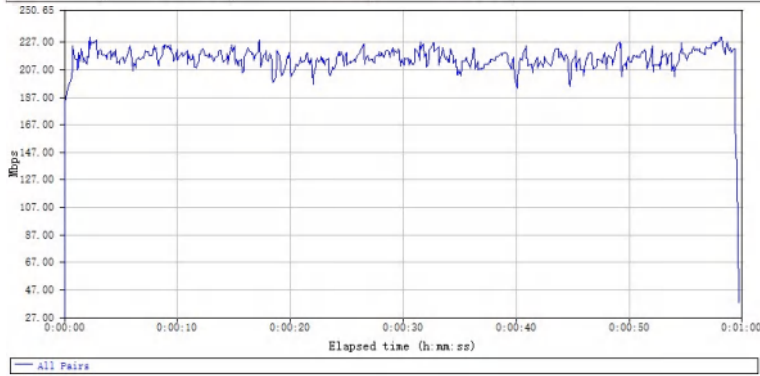
2G frequency 11 channel RX

Group/ Pair	Average (Mbps)	Minimum (Mbps)	Maximum (Mbps)	Throughput 95% Confidence Interval	Measured Time (secs)	Relative Precision
All Pairs	80.580	10.288	17.937			
Pair 1	13.435	10.288	16.863	0.552	59.546	4.111
Pair 2	13.817	11.474	17.937	0.499	59.347	3.609
Pair 3	13.575	10.917	16.935	0.511	58.931	3.761
Pair 4	13.468	11.161	17.937	0.499	59.402	3.702
Pair 5	13.435	10.805	16.639	0.524	59.546	3.899
Pair 6	13.350	10.352	17.513	0.513	58.425	3.839
Totals:	80.580	10.288	17.937			



5G frequency 136 channel TX

Group/ Pair	Average (Mbps)	Minimum (Mbps)	Maximum (Mbps)	Throughput 95% Confidence Interval	Measured Time (secs)	Relative Precision
All Pairs	214.229	13.661	80.000			
Pair 1	30.304	20.387	51.813	1.025	59.399	3.383
Pair 2	39.094	19.512	62.500	2.429	59.344	6.213
Pair 3	32.036	13.661	70.423	2.175	59.932	6.788
Pair 4	42.535	24.155	80.000	1.749	59.716	4.111
Pair 5	36.902	18.886	58.824	1.902	59.618	5.154
Pair 6	34.590	18.536	53.192	1.827	59.554	5.282
Totals:	214.229	13.661	80.000			



5G frequency 136 channel Rx

Group/ Pair	Average (Mbps)	Minimum (Mbps)	Maximum (Mbps)	Throughput 95% Confidence Interval	Measured Time (secs)	Relative Precision
All Pairs	266.934	29.851	50.633			
Pair 1	45.046	31.008	47.733	0.371	59.495	0.823
Pair 2	43.361	36.630	46.083	0.239	59.500	0.551
Pair 3	43.427	29.851	46.512	0.357	59.870	0.822
Pair 4	44.180	32.733	48.193	0.313	59.755	0.708
Pair 5	44.430	30.960	48.309	0.364	59.869	0.819
Pair 6	47.576	37.807	50.633	0.282	59.694	0.593
Totals:	266.934	29.851	50.633			

