



DONGGUAN ZCONNLINK ELECTRONIC TECHNOLOGY CO., LTD

SPECIFICATION FOR APPROVAL

Customer Name: MAKEBLOCK

Customer P/N: E2501000010

Material Name: Internal FPC Antenna

Supplier P/N: 830000150122

Description: 2.4&5.8G Dual band Antenna I-PEX RF1.13 L=150mm

Version: V1.0

Customer Approval		
Engineer	QA	Approval
Signed Or Sealed		
Date	2025.11.25	

Supplier Name: Dongguan Zconnlink Electronic Technology Co.,Ltd

Supplier Address: No:90 Dapantian Road,Jingju Village,Dalingshan Town Dongguan City

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E-mail: jonathan.lee@zconnlink.com



SPECIFICATION

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Material Name: Internal FPC Antenna

Supplier Name: ZCONNLINK

Manufacturer: ZCONNLINK

Remark: _____

Prepared	Review	Approval
Eric Wang 2025.11.25	Sally Lee 2025.11.25	Jonathan Lee 2025.11.25

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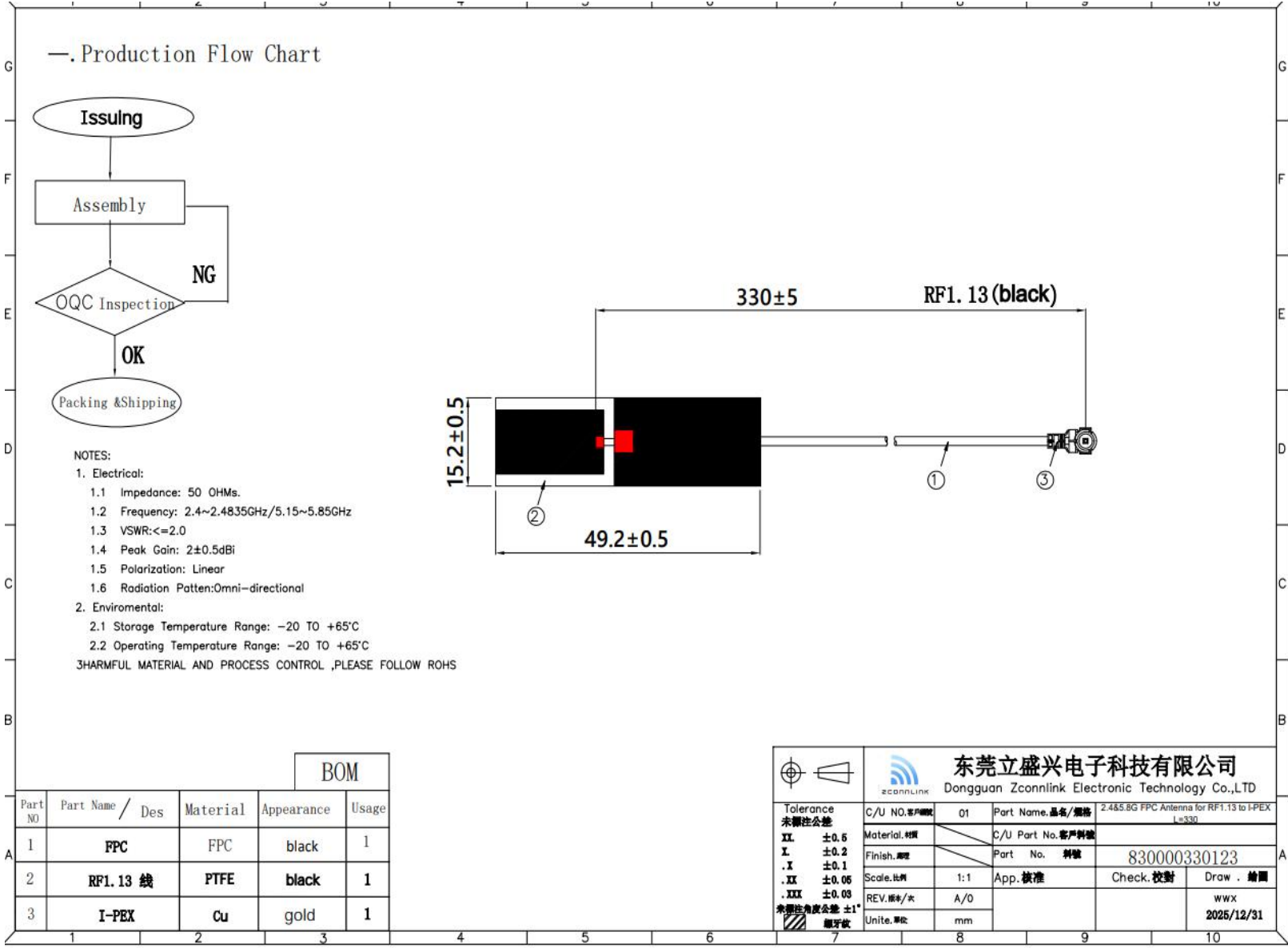


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One. Engineer Drawing



Electrical Parameters:

Frequency Band	2.4~2.4835GHz/5.15~5.85GHz
Impedance	50 Ω
VSWR	≤ 2.0
Polarization	Circular polarization
Gain	2.0 $\pm$ 0.5dBi
Shortage Temperature	-20 $^{\circ}$ C~+65 $^{\circ}$ C
Operating Temperature	-20 $^{\circ}$ C~+65 $^{\circ}$ C

Two. Material List:

No:	Part Name:	Major material
1	Main body	FPC
2	RF1.13 Black	CU+FEP
3	I-PEX	CU



Three:Environment And Reliability Test

Test item	Test basis	Judge requirement	Test equipment	Sample no Rejects(PCS)
Vibration	According to the B/T2423.48-199 prescribed method	1.No structural damage 2.Electrical meets the standard	Vibration tester	10/0
Drop	According to the B/T2423.8-1995 prescribed method	1. Drop height(mm) 1000 2. Smooth floor surface 3. Total number of falls (No:) 80	Drop tester	10/0
Constant temperature and humidity	According to the B/T 2423.3-93 chapter 5 prescribed method	1. Temperature (°C) 40 ± 2 2. humidity (%) 90~95 3. Time (h) 21 4. Recovery time (h) 1	Constant temperature and humidity Tester	10/0
Salt spray	B/T 2423.17-93 Temperature 55°C humidity $\geq 95\%$ NaCl ≥ 5	1.After working for 48 hours, remove and air-dry for 2 hours before resuming normal operation	Salt spray tester	10/0
High-temperature storage	B/T 2423.4-93 Temperature 70°C	1.24-hour recovery to room temperature 2.No structural damage 3.Electrical meets the standard	Constant temperature and humidity Tester	10/0
Pulling force	Test terminal tension 9.8N Bear one minute	Test terminal pull force 9.8N withstand 1 minute, Check again if the electrical are OK.	Tension meter	10/0



Four. Sample test report

No:	Item	Standard	N01	N02	N03	N04	N05
1	VSVR Max	≤ 2.0	1.72	1.83	1.81	1.76	1.65
2	Impedance	$50\Omega \pm 10$	49	50	47	46	48
3	Dimension	$150 \pm 5\text{mm}$	151	151.5	150.5	149.5	150
4	Dimension	$49.2 \pm 0.5\text{mm}$	49.4	49.3	49.1	49.2	49.0
5	Dimension	$15.2 \pm 0.5\text{mm}$	15.3	15.4	15.2	15.1	15.3



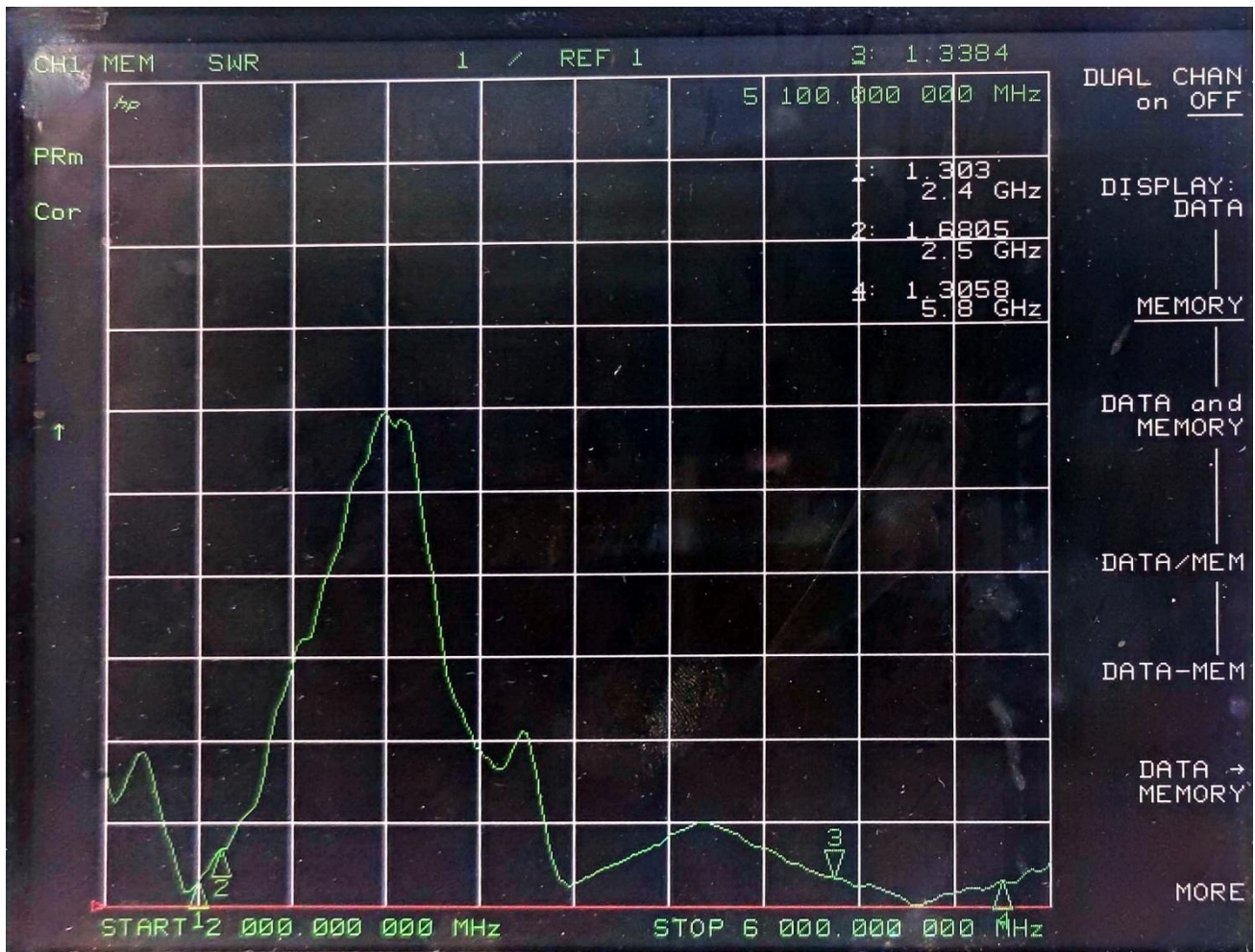
ZCONNLINK DONGGUAN ZCONNLINK ELECTRONIC TECHNOLOGY CO., LTD

Five. WiFi Performance Test

HP8753D



电压驻波比

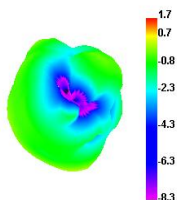




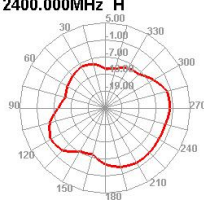
Six. WiFi Passive Test

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
2400	27.76	-5.57	1.71	-0.44	10.775	16.988	1.71	-26.42
2410	30.98	-5.09	2.03	-0.12	12.012	18.971	2.03	-24.06
2420	32.65	-4.86	2.06	-0.09	12.685	19.965	2.06	-24.92
2430	33.24	-4.78	1.84	-0.31	12.95	20.294	1.84	-24.43
2440	33.49	-4.75	1.82	-0.33	13.08	20.413	1.82	-22.29
2450	41.14	-3.86	2.8	0.65	15.85	25.292	2.8	-19.11
2460	33.81	-4.71	1.97	-0.18	13.101	20.708	1.97	-18.85
2470	44.46	-3.52	3.5	1.35	16.869	27.594	3.5	-16.31
2480	42.48	-3.72	2.97	0.82	16.38	26.102	2.97	-17.15
2490	44.75	-2.62	2.87	2.72	20.628	24.121	2.87	-17.76
2500	47.22	-3.26	2.69	1.54	18.125	25.091	2.69	-19.98

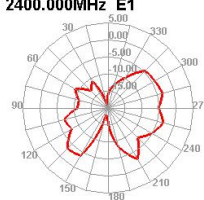
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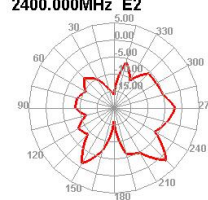
2400.000MHz H



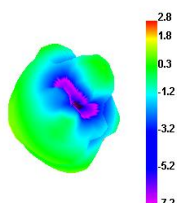
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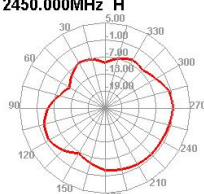
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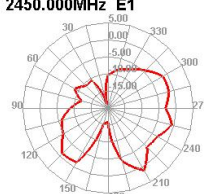
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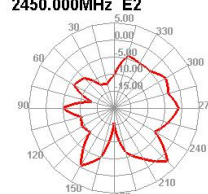
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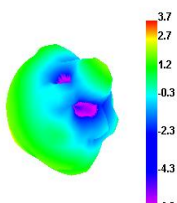
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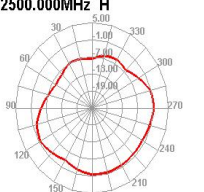
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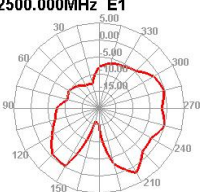
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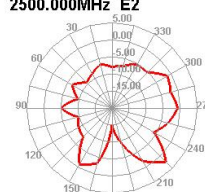
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2500.000MHz E1



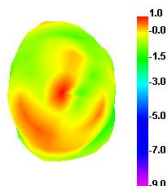
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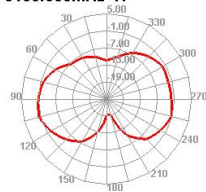


Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)
5150	44.73	-3.49	1	-1.15	24.793	19.939	1	-23.98
5200	38.03	-4.2	0.57	-1.58	21.209	16.821	0.57	-24.32
5250	43.12	-3.67	0.42	-1.73	23.948	19.049	0.42	-21.9
5300	44.55	-3.51	0.87	-1.28	24.896	19.656	0.87	-23.4
5350	54.85	-2.61	2.11	-0.04	30.836	24.017	2.11	-23.58
5400	64.01	-1.94	2.59	0.44	36.107	27.901	2.59	-26.49
5450	63.58	-1.97	2.71	0.56	35.887	27.691	2.71	-23.39
5500	54.14	-2.67	1.78	-0.37	30.626	23.511	1.78	-20.16
5550	57.41	-2.41	1.96	-0.19	32.593	24.815	1.96	-18.78
5600	56.12	-2.51	1.69	-0.46	31.947	24.171	1.69	-18.4
5650	68.38	-1.65	2.21	0.06	38.912	29.464	2.21	-17.59
5700	68.72	-1.63	2.32	0.17	38.987	29.737	2.32	-17.67
5750	64.59	-1.27	2.8	0.65	42.381	32.207	2.8	-16.4
5800	61.92	-2.08	2.09	-0.06	35.22	26.696	2.09	-20.11
5850	56.68	-2.03	1.77	-0.38	35.407	27.274	1.77	-20.85

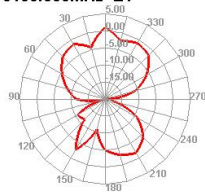
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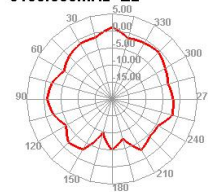
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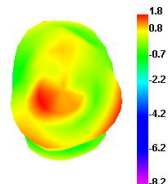
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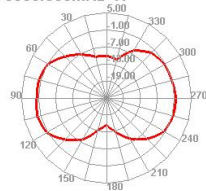
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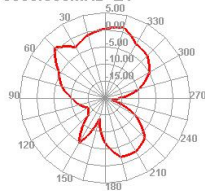
5500.000MHz



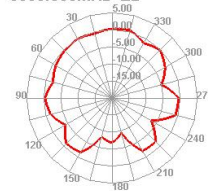
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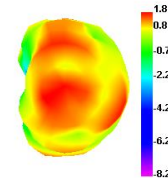
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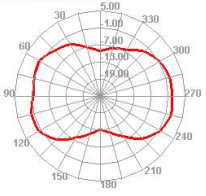
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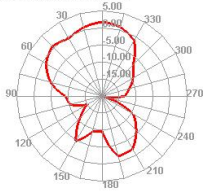
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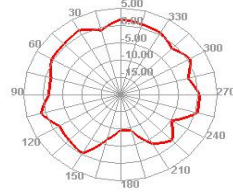
5850.000MHz H



5850.000MHz E1



5850.000MHz E2





Seven. WiFi TRP&TIS Test

#	Type	Standard	Band	ChNo	Fequency	Total
1	Trp	Wifi (AP)	WIFI_B (11Mbps)	1	2412	16.88
2	Trp	Wifi (AP)	WIFI_B (11Mbps)	6	2437	17.18
3	Trp	Wifi (AP)	WIFI_B (11Mbps)	11	2462	17.55
4	Tis(Eirp)	Wifi (AP)	WIFI_B (11Mbps)	1	2412	-85.97(16.94)
5	Tis(Eirp)	Wifi (AP)	WIFI_B (11Mbps)	6	2437	-85.95(17.19)
6	Tis(Eirp)	Wifi (AP)	WIFI_B (11Mbps)	11	2462	-86.67(17.58)
7	Trp	Wifi (AP)	WIFI_G (54Mbps)	1	2412	16.9
8	Trp	Wifi (AP)	WIFI_G (54Mbps)	6	2437	17.84
9	Trp	Wifi (AP)	WIFI_G (54Mbps)	11	2462	17.13
10	Tis(Eirp)	Wifi (AP)	WIFI_G (54Mbps)	1	2412	-73.68(16.9)
11	Tis(Eirp)	Wifi (AP)	WIFI_G (54Mbps)	6	2437	-74.06(17.76)
12	Tis(Eirp)	Wifi (AP)	WIFI_G (54Mbps)	11	2462	-74.57(17.12)
13	Trp	Wifi (AP)	WIFI_GN (Mcs7)	1	2412	16.85
14	Trp	Wifi (AP)	WIFI_GN (Mcs7)	6	2437	17.75
15	Trp	Wifi (AP)	WIFI_GN (Mcs7)	11	2462	17.13
16	Tis(Eirp)	Wifi (AP)	WIFI_GN (Mcs7)	1	2412	-70.08(16.86)
17	Tis(Eirp)	Wifi (AP)	WIFI_GN (Mcs7)	6	2437	-70.23(17.78)
18	Tis(Eirp)	Wifi (AP)	WIFI_GN (Mcs7)	11	2462	-70.61(17.09)
19	Trp	Wifi (AP)	WIFI_A (54Mbps)	36	5180	17.24
20	Trp	Wifi (AP)	WIFI_A (54Mbps)	100	5500	14.87
21	Trp	Wifi (AP)	WIFI_A (54Mbps)	165	5825	17.66
22	Tis(Eirp)	Wifi (AP)	WIFI_A (54Mbps)	36	5180	-74.14(17.23)
23	Tis(Eirp)	Wifi (AP)	WIFI_A (54Mbps)	100	5500	-74.47(15.9)
24	Tis(Eirp)	Wifi (AP)	WIFI_A (54Mbps)	165	5825	-73.47(17.66)
25	Trp	Wifi (AP)	WIFI_AC (Mcs8)	36	5180	18.1
26	Trp	Wifi (AP)	WIFI_AC (Mcs8)	100	5500	16.02
27	Trp	Wifi (AP)	WIFI_AC (Mcs8)	165	5825	17.59
28	Tis(Eirp)	Wifi (AP)	WIFI_AC (Mcs8)	36	5180	-68.89(18.09)
29	Tis(Eirp)	Wifi (AP)	WIFI_AC (Mcs8)	100	5500	-68.1(15.98)
30	Tis(Eirp)	Wifi (AP)	WIFI_AC (Mcs8)	165	5825	-67.23(17.63)