

## Antenna Test Report

Client name • Hot pepper

project name • HPPL62A

Date & Version: 09/18/2022 A10

1.Project Overview .....

2.Test equipment and environment introduction .....

3.Project pictures .....

4.Antenna product pictures .....

5.Main antenna test data .....

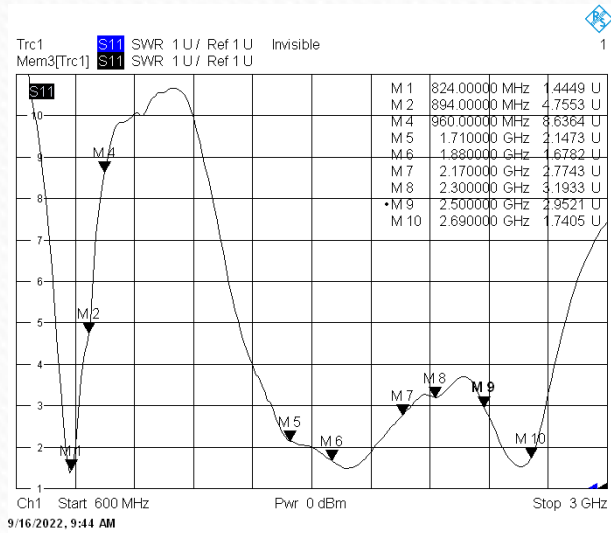
6.DIV antenna test data .....

7.3in1 antenna test data .....

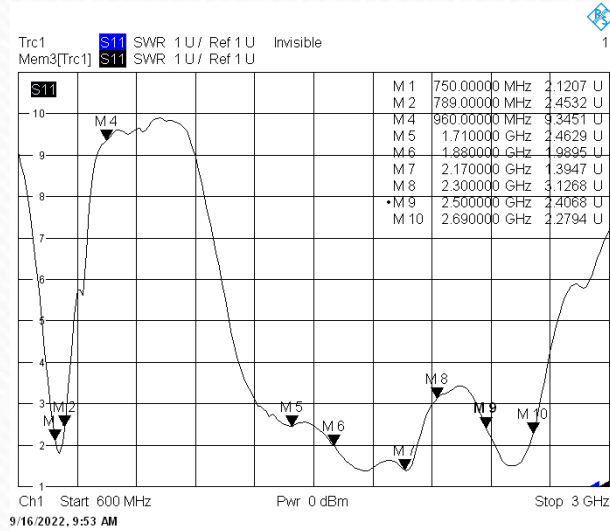
Type of product	Mobile phone
Number of antennas	Main antenna & DIV antenna & 3in1 antenna
Band	GSM 850/1900
	WCDMA Band2/4/5
	FDD Band2/4/5/12/13/25/26/66/71
	TDD Band41 FB
	GPS L1 + WIFI 802.11 b/g/n + BT
structural form	FPC
Environmental treatment	N/A

## S11-VSWR

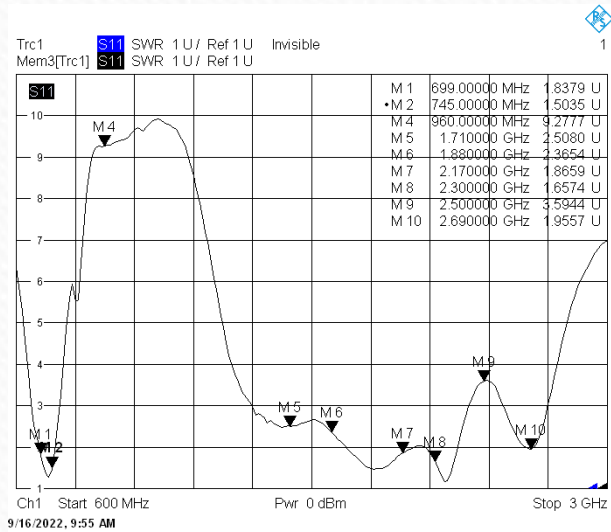
Antenna tuner works in RF1 channel



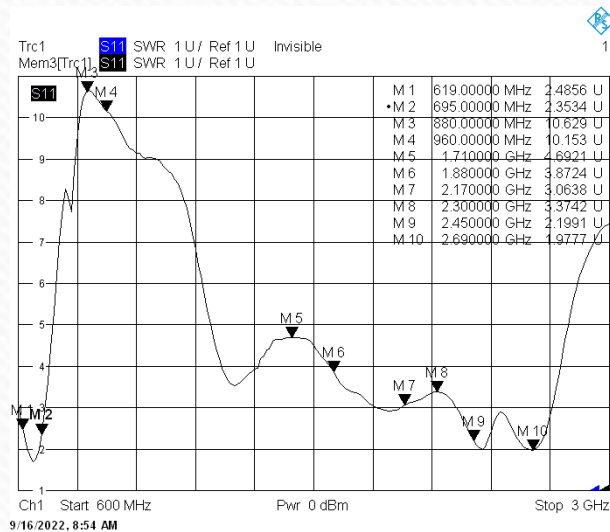
Antenna tuner works in RF2 channel



Antenna tuner works in RF3 channel



Antenna tuner works in RF4 channel



## Efficiency & Gain

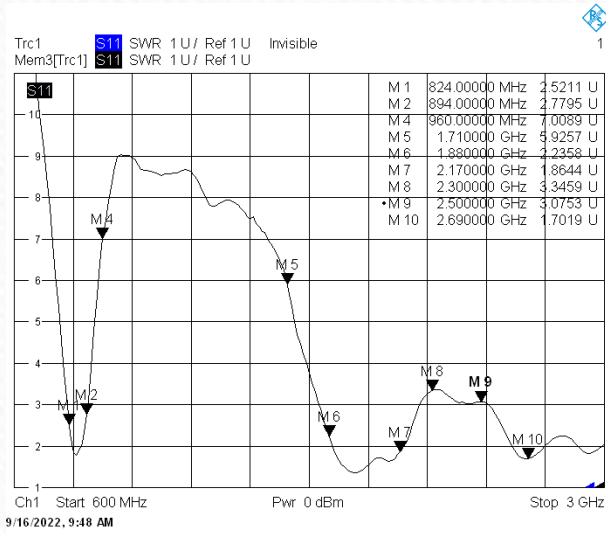
Frequency/Mhz	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / %	MaxGain/dBi
600	30.89	-1.98	1710	44.46	0.19	2050	46.88	-0.39
610	32.28	-2.28	1720	45.29	0.31	2060	44.36	-0.4
620	32.28	-2.73	1730	45.71	0.36	2070	43.65	-0.29
630	31.28	-3.13	1740	45.81	0.43	2080	42.27	0.15
640	31.43	-2.64	1750	46.77	0.32	2090	40.64	0.24
650	29.19	-1.79	1760	47.75	0.33	2100	39.72	0.62
660	28.71	-0.92	1770	47.53	0.28	2110	38.9	0.53
670	29.54	-0.8	1780	47.86	0.7	2120	37.76	0.55
680	29.41	-0.92	1790	47.75	0.98	2130	35.89	0.07
690	27.91	-0.14	1800	46.88	1.19	2140	33.81	-0.3
700	27.42	0.5	1810	47.64	1.31	2150	32.51	-0.68
710	24.93	-0.01	1820	48.31	1.28	2160	31.84	-0.66
720	25.31	-0.06	1830	48.19	0.98	2170	31.77	-0.49
730	24.39	-0.96	1840	49.89	0.98	2500	36.06	0.36
740	24	-1.02	1850	50.93	1.06	2510	36.81	0.35
750	23.03	-1.01	1860	51.05	1.14	2520	38.46	0.86
760	23.06	-0.63	1870	50.93	1.1	2530	40.18	1.75
770	21.94	-1.18	1880	52.36	1.29	2540	40.36	2.01
780	21.02	-1.61	1890	52	1.24	2550	42.07	2.47
790	20.99	-1.58	1900	53.21	1.38	2560	42.66	2.41
800	22.74	-2.75	1910	55.08	1.33	2570	43.15	2.41
810	25.42	-1.77	1920	54.08	1.07	2580	43.15	2.23
820	28.92	-1.08	1930	53.58	0.73	2590	45.08	2.27
830	31.53	-0.59	1940	54.45	0.73	2600	44.98	2.18
840	31.09	-0.82	1950	54.7	0.77	2610	45.6	2.3
850	30.23	-1.14	1960	54.2	0.69	2620	44.87	2.29
860	29.32	-1.49	1970	55.46	0.71	2630	44.26	2.3
870	28.84	-1.8	1980	54.58	0.84	2640	43.05	2.2
880	28.32	-1.93	1990	53.09	0.46	2650	42.95	2.12
890	27.74	-1.83	2000	51.52	0.34	2660	42.85	2
900	24.59	-2.62	2010	50.47	-0.03	2670	42.66	1.9
			2020	48.53	-0.04	2680	41.02	1.98
			2030	47.75	-0.28	2690	38.64	1.72
			2040	48.19	-0.17			

Measurement	Band	Channel	FS	BHHL	BHHR	SPEC
TRP	PCS1900	512	27.34	23.55	24.78	FS:27/BH:22
TRP	PCS1900	661	27.2	23.84	26.24	FS:27/BH:22
TRP	PCS1900	810	27.11	23.69	26.2	FS:27/BH:22
TIS	PCS1900	512	-108.38	-105.67	-107.93	FS:-103/BH:-98
TIS	PCS1900	661	-108.27	-106.07	-107.53	FS:-103/BH:-98
TIS	PCS1900	810	-108.88	-106.63	-108.02	FS:-103/BH:-98
TRP	WCDMA_B2	9262	19.7	15.77	18.05	FS:20/BH:15
TRP	WCDMA_B2	9400	19.29	16.11	18.01	FS:20/BH:15
TRP	WCDMA_B2	9538	19.6	16.47	18.23	FS:20/BH:15
TIS	WCDMA_B2	9662	-109.7	-106.32	-108.13	FS:-107.5/BH:-102
TIS	WCDMA_B2	9800	-111.46	-104.86	-109.93	FS:-107.5/BH:-102
TIS	WCDMA_B2	9938	-110.33	-107.01	-109.57	FS:-107.5/BH:-102
TRP	WCDMA_B4	1312	19.87	14.99	17.83	FS:21/BH:16
TRP	WCDMA_B4	1413	19.97	14.86	17.7	FS:21/BH:16
TRP	WCDMA_B4	1513	19.94	14.86	17.75	FS:21/BH:16
TIS	WCDMA_B4	1537	-110.71	-107.51	-109.23	FS:-108.5/BH:-104
TIS	WCDMA_B4	1638	-110.92	-107.94	-109.83	FS:-108.5/BH:-104
TIS	WCDMA_B4	1738	-111.47	-108.13	-109.49	FS:-108.5/BH:-104

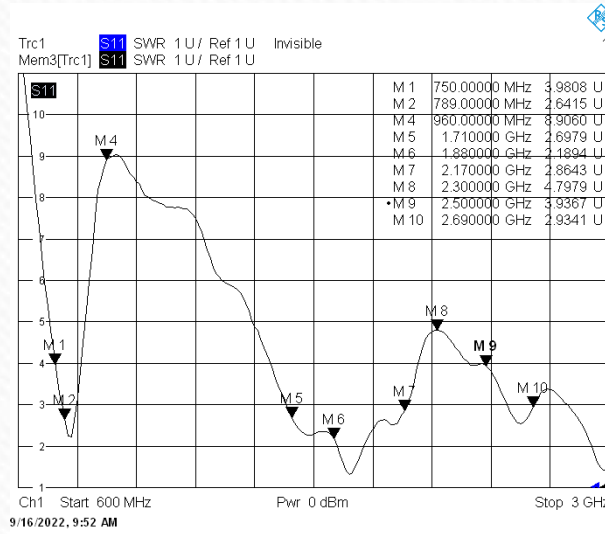
Measurement	Band	Channel	FS	BHHL	BHHR	SPEC
TIS FAST	TDD_B41(20MHz)	39750	-96.66	-93.89	-94.86	FS:-92/BH:-87
TIS FAST	TDD_B41(20MHz)	40620	-97.07	-93.8	-94.88	FS:-92/BH:-87
TIS FAST	TDD_B41(20MHz)	41490	-95.77	-92.82	-92.96	FS:-92/BH:-87
TRP	FDD_B2(10MHz)	18650	21.1	17.22	19.46	FS:19.5/BH:14.5
TRP	FDD_B2(10MHz)	18900	20.68	17.53	19.43	FS:19.5/BH:14.5
TRP	FDD_B2(10MHz)	19150	21.48	18.33	20.11	FS:19.5/BH:14.5
TIS FAST	FDD_B2(10MHz)	650	-98.47	-94.88	-96.69	FS:-95/BH:-90
TIS FAST	FDD_B2(10MHz)	900	-99.78	-96.12	-98.39	FS:-95/BH:-90
TIS FAST	FDD_B2(10MHz)	1150	-100.61	-96.13	-98.38	FS:-95/BH:-90
TRP	FDD_B4(10MHz)	20000	24.23	18.93	21.67	FS:20/BH:15
TRP	FDD_B4(10MHz)	20175	24.49	19	21.77	FS:20/BH:15
TRP	FDD_B4(10MHz)	20350	23.98	18.75	21.48	FS:20/BH:15
TIS FAST	FDD_B4(10MHz)	2000	-98.94	-96.43	-98.12	FS:-97/BH:-92
TIS FAST	FDD_B4(10MHz)	2175	-100.29	-97.46	-99.01	FS:-97/BH:-92
TIS FAST	FDD_B4(10MHz)	2350	-99.92	-97.35	-98.46	FS:-97/BH:-92
TRP	FDD_B66(10MHz)	132022	21.16	15.97	18.68	FS:20/BH:15
TRP	FDD_B66(10MHz)	132322	21	15.74	18.46	FS:20/BH:15
TRP	FDD_B66(10MHz)	132622	20.69	15.98	18.66	FS:20/BH:15
TIS FAST	FDD_B66(10MHz)	66536	-98.37	-95.84	-97.66	FS:-97/BH:-92
TIS FAST	FDD_B66(10MHz)	66786	-99.25	-96.75	-97.97	FS:-97/BH:-92
TIS FAST	FDD_B66(10MHz)	67036	-98.93	-96.59	-97.84	FS:-97/BH:-92
TRP	FDD_B71(10MHz)	133172	19.69	13.84	17.07	FS:17/BH:10.5
TRP	FDD_B71(10MHz)	133297	19.62	13.29	16.45	FS:17/BH:10.5
TRP	FDD_B71(10MHz)	133422	19.75	13.27	16.31	FS:17/BH:10.5
TIS FAST	FDD_B71(10MHz)	68686	-95.53	-93.84	-94.46	FS:-92/BH:-85.5
TIS FAST	FDD_B71(10MHz)	68761	-97.33	-95.81	-96.73	FS:-92/BH:-85.5
TIS FAST	FDD_B71(10MHz)	68836	-96.68	-95.22	-95.63	FS:-92/BH:-85.5
TRP	FDD_B12(5MHz)	23035	20.1	14.08	16.54	FS:18/BH:12
TRP	FDD_B12(5MHz)	23095	20.53	14.4	16.74	FS:18/BH:12
TRP	FDD_B12(5MHz)	23155	20.46	14.56	16.83	FS:18/BH:12
TIS FAST	FDD_B12(5MHz)	5035	-100.7	-98.48	-97.97	FS:-95/BH:-89
TIS FAST	FDD_B12(5MHz)	5095	-100.75	-98.93	-98.1	FS:-95/BH:-89
TIS FAST	FDD_B12(5MHz)	5155	-102.05	-100.35	-99.31	FS:-95/BH:-89
TRP	FDD_B13(5MHz)	23205	19.45	13.83	16.66	FS:18/BH:12
TIS FAST	FDD_B13(5MHz)	5205	-94.44	-91.67	-91.99	FS:-95/BH:-89
TRP	FDD_B25(5MHz)	26065	19.04	15.88	18.13	FS:19.5/BH:14.5
TRP	FDD_B25(5MHz)	26365	19.52	16.97	18.81	FS:19.5/BH:14.5
TRP	FDD_B25(5MHz)	26665	19.98	17.54	19.29	FS:19.5/BH:14.5
TIS FAST	FDD_B25(5MHz)	8065	-101.24	-97.48	-99.55	FS:-96.5/BH:-91.5
TIS FAST	FDD_B25(5MHz)	8365	-102.23	-98.69	-100.89	FS:-96.5/BH:-91.5
TIS FAST	FDD_B25(5MHz)	8665	-101.97	-98.18	-100.51	FS:-96.5/BH:-91.5
TRP	FDD_B26(5MHz)	26715	19.22	15.37	16.98	FS:18/BH:10
TRP	FDD_B26(5MHz)	26865	19.02	15.25	17.65	FS:19/BH:11
TRP	FDD_B26(5MHz)	27015	19.29	14.33	17.53	FS:18/BH:10
TIS FAST	FDD_B26(5MHz)	8715	-101.21	-97.84	-97.05	FS:-92.5/BH:-84.5
TIS FAST	FDD_B26(5MHz)	8865	-101.85	-97.86	-97.07	FS:-94/BH:-86
TIS FAST	FDD_B26(5MHz)	9015	-98.85	-97.28	-98.25	FS:-92.5/BH:-84.5

### S11-VSWR

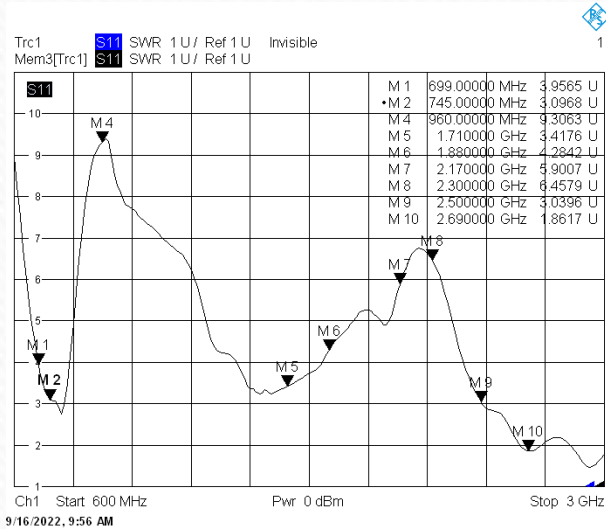
Antenna tuner works in RF1 channel



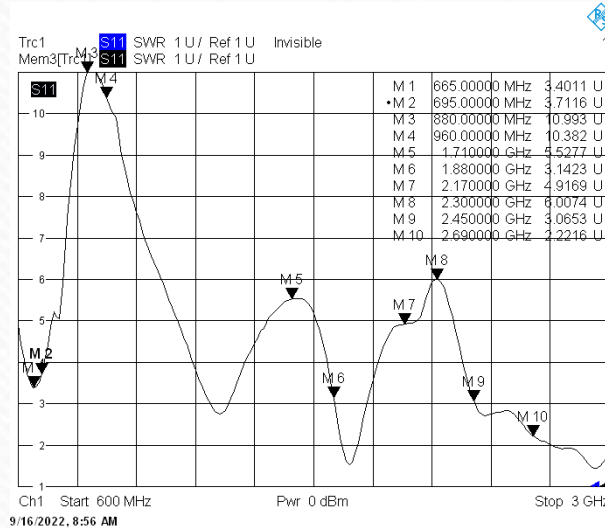
Antenna tuner works in RF2 channel



Antenna tuner works in RF3 channel



Antenna tuner works in RF4 channel

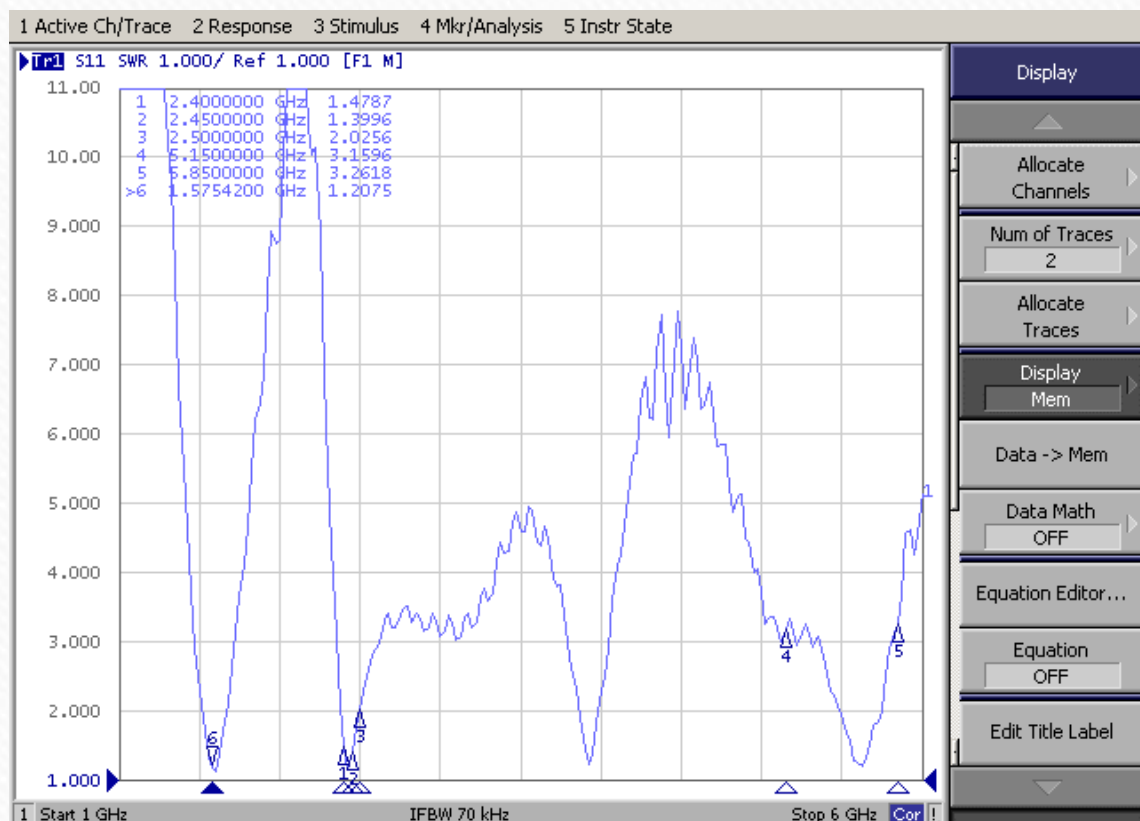




## Efficiency & Gain

Frequency/Mhz	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / %	MaxGain/dBi
600	10	-6.73	1710	11.8	-3.21	2050	47.97	1.94
610	10.52	-7.02	1720	13.4	-2.73	2060	47.53	2.02
620	10.5	-7.77	1730	15.17	-2.23	2070	47.1	1.9
630	10.36	-7.81	1740	18.16	-1.77	2080	45.81	2.13
640	10.6	-7.4	1750	20.56	-1.51	2090	45.39	2.2
650	10.08	-6.8	1760	23.33	-1.18	2100	45.29	2.55
660	10.02	-5.92	1770	26.12	-0.66	2110	44.06	2.38
670	10.36	-5.75	1780	28.31	-0.41	2120	44.87	2.55
680	10.3	-6.24	1790	30.13	-0.13	2130	43.55	2.21
690	10.19	-5.66	1800	32.81	0.32	2140	40.74	1.78
700	10.35	-5.25	1810	33.96	0.64	2150	41.21	1.48
700	12.93	-4.4	1820	35.89	0.9	2160	40.46	1.19
710	13.77	-3.76	1830	37.93	1.25	2170	40.36	0.93
720	14.51	-3.54	1840	39.72	1.45	2500	28.91	1.37
730	14.64	-4.01	1850	41.21	1.41	2510	28.77	1.44
740	15.02	-3.75	1860	42.85	1.34	2520	28.38	1.32
750	15.38	-3.44	1870	43.35	1.24	2530	28.77	1.56
760	16.25	-2.98	1880	44.06	1.16	2540	28.77	1.52
770	16.04	-3.38	1890	44.36	1.23	2550	28.97	1.71
780	16.97	-2.82	1900	45.39	1.61	2560	28.58	1.66
790	20.21	-1.81	1910	46.45	1.98	2570	28.91	1.88
800	20.7	-4.11	1920	46.45	2.18	2580	28.44	1.85
810	18.61	-4.67	1930	46.45	2.14	2590	29.51	1.97
820	21.41	-3.57	1940	47.32	2.15	2600	29.79	2.02
830	24.36	-2.14	1950	47.42	1.93	2610	30.55	1.93
840	24.95	-1.68	1960	48.42	1.95	2620	30.2	1.81
850	25.37	-2.08	1970	49.89	1.97	2630	30.83	1.53
860	27.44	-2.92	1980	49.77	2.12	2640	30.2	1.34
870	29.83	-2.89	1990	50.23	2.13	2650	30.27	1.31
880	29.49	-3.04	2000	49.77	2.34	2660	31.12	1.4
890	28.44	-3.44	2010	48.87	2.11	2670	30.48	1.4
900	27.44	-3.97	2020	47.97	2.11	2680	29.24	1.24

## S11-VSWR



## Efficiency&gain

Frequency/Mhz	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / %	MaxGain/dBi
1500	41.59	1.92	2400	43.75	-0.02
1510	42.85	2.12	2410	45.5	0.57
1520	45.08	2.12	2420	46.56	0.3
1530	46.34	2.23	2430	48.64	1.33
1540	46.67	1.98	2440	49.43	1.6
1550	48.31	2.31	2450	46.99	1.8
1560	46.03	2.15	2460	48.31	1.82
1570	47.75	2.56	2470	44.57	1.26
1580	45.39	1.94	2480	45.6	1.55
1590	44.16	1.8	2490	41.59	1.04
1600	43.35	1.61	2500	43.75	1.21
1610	42.17	1.43			
1620	41.88	1.55			
1630	40.46	0.96			
1640	39.99	1.03			
1650	38.64	0.53			
1660	37.07	0.55			
1670	35.73	0.45			
1680	36.14	0.21			
1690	31.62	-0.33			
1700	31.48	-0.56			

## Active Test Data

Measurement	Band	Channel	Frequency	FS	HR	BHHR
TRP	WIFI_B (11M)	1	2412	16.24	13.4	12.28
TRP	WIFI_B (11M)	6	2437	17.11	14.06	13.37
TRP	WIFI_B (11M)	11	2462	16.81	13.99	12.8
TIS	WIFI_B (11M)	1	2412	-83.38	-81.75	-80.1
TIS	WIFI_B (11M)	6	2437	-84.43	-82.65	-81.47
TIS	WIFI_B (11M)	11	2462	-84.49	-81.67	-80.58
TRP	WIFI_G (54M)	1	2412	13.7	11.01	
TRP	WIFI_G (54M)	6	2437	14.22	11.74	
TRP	WIFI_G (54M)	11	2462	13.66	11.19	
TIS	WIFI_G (54M)	1	2412	-73.86	-68.5	
TIS	WIFI_G (54M)	6	2437	-72.1	-69.81	
TIS	WIFI_G (54M)	11	2462	-74.27	-68.71	
TRP	WIFI_N_ISM (65M)	1	2412	13.75		
TRP	WIFI_N_ISM (65M)	6	2437	14.43		
TRP	WIFI_N_ISM (65M)	11	2462	13.96		
TIS	WIFI_N_ISM (65M)	1	2412	-66.96		
TIS	WIFI_N_ISM (65M)	6	2437	-68.77		
TIS	WIFI_N_ISM (65M)	11	2462	-68.02		

Test	GPS TIS
Result	1
Frequency (MHz)	1575.42
TIS(dBm)	-144.33
AdditionalInfor	capture

# Thank You

**Shanghai R&D Center:** 1F, Building 4, No.99, Lane 215, Gaoguang Road, Qingpu District, Shanghai, 201799, PRC

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**ChongQing R&D Center:** 1F, ARM Ecological Industrial Park, 19 East Datugu Road, Xiantao, Yubei District, Chongqing, 401120, PRC

**Huizhou Factory:** 4-5F, No.1, Central Village Road, Longhu Industrial Zone, Shuikou Town, Huicheng District, Huizhou, 516255, PRC

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