

The Main Antenna Sample Confirmation

File number: SNW-QR-D-007/A.0

Customer	SHENZHEN ALONG ELECTRONICS CO., LTD.		
Project Name	6503-K20	Date	2023-12-19
		Project NO.	SN1138
Frequency Range	2G: GSM850/EGSM900/PCS1800/PCS1900 3G: W2/W4/W5 4G: B2/B4/B5/B12/B13/B17/B25/B26/B41/B66/B71		

Designer: SINAWELL Electronics(Shenzhen) Co., Ltd.

Add: 712-717, Block A Jinfulai Building, 49-1 Dabao Road, Xinan 28th area, Baoan District, Shenzhen, China

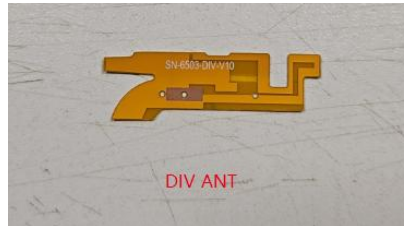
Catalogue

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1. Overview of specifications

This specification describes the status of 6503-K20 built-in antenna, and its frequency band is 4G.

2. Antenna appearance



3. Electrical performance

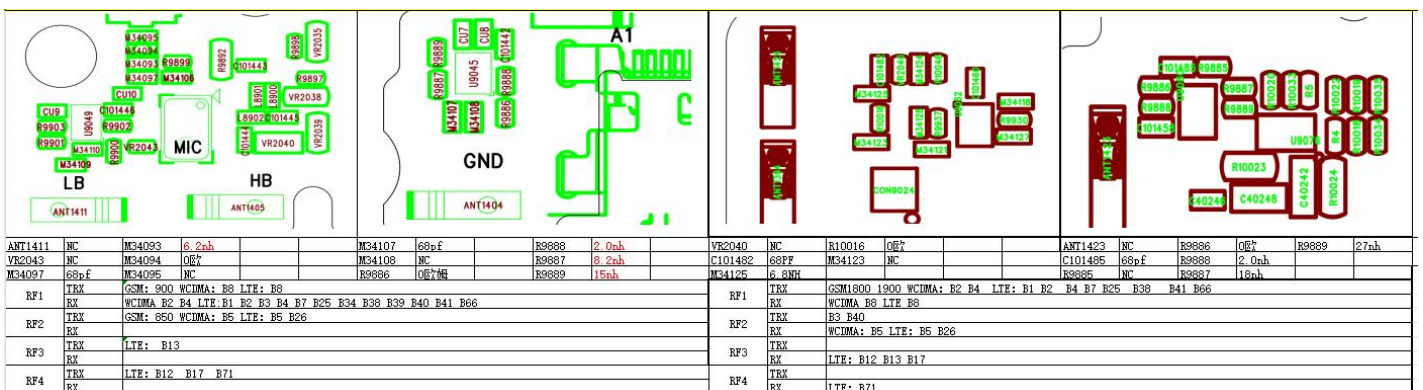
3.1. Antenna frequency band

	Main antenna
Transmitting frequency band(MHz)	2G:GSM850/EGSM900/PCS1800/PCS1900 3G:W2/W4/W5 4G:B2/B4/B5/B12/B13/B17/B25/B26/B41/B66/B71

3.2. Matching circuit

The test point is behind the antenna connector (RF test port), as shown in the figure below.

Note: the antenna matching electronic material should be 1% accurate.



ANT1411	NC	M34093	6.2nh		M34107	68pF	R9896	2.0nh		VR2040	NC	R10016	0Ω		ANT1423	NC	R9896	0Ω	R9889	27nh			
VR2043	NC	M34094	0Ω		M34108	NC	R9897	8.2nh		C101492	68PF	M34123	NC		C101495	68pF	R9888	2.0nh					
M34097	68pF	M34095	NC		R9886	0Ω	R9889	15nh		M34125	6.8NH				R9885	NC	R9887	16nh					
RF1	TRX	GSM: 900 WCIMA: B8 LTE: B8										RF1	TRX	GSM1800 1900 WCIMA: B2 B4 LTE: B1 B2 B4 B7 B25 B38 B41 B66									
	RX	WCIMA B2 B4 LTE: B1 B2 B3 B4 B7 B25 B34 B38 B39 B40 B41 B66											RX	WCIMA B8 LTE: B8									
RF2	TRX	GSM: 850 WCIMA: B5 LTE: B5 B26										RF2	TRX	B3 B40									
	RX												RX	WCIMA: B5 LTE: B5 B26									
RF3	TRX	LTE: B13										RF3	TRX										
	RX												RX	LTE: B12 B13 B17									
RF4	TRX	LTE: B12 B17 B71										RF4	TRX										
	RX												RX	LTE: B71									

4. Appearance structure

4.1. Antenna material FPC

Remarks


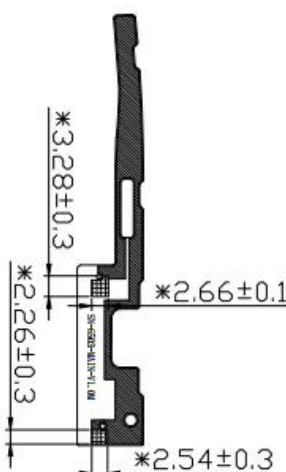
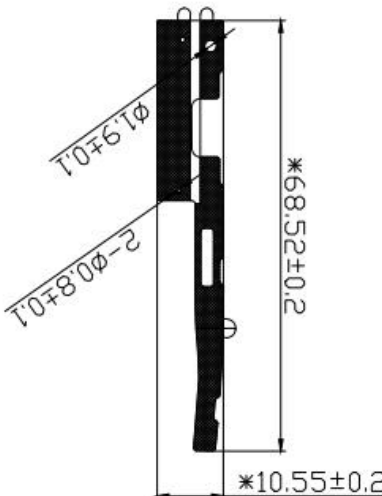



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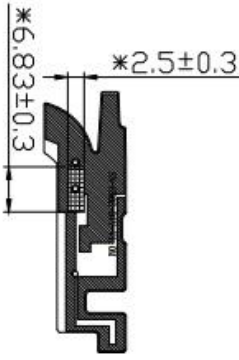
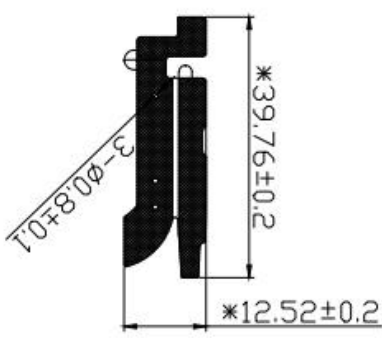



Appendix I: structural drawings
BT Antenna structure drawing

Appendix 1: Structural Drawings

Appendix II: Electrical Performance Test Report

Appendix 1: FPC structural drawings

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Appendix II: 3D Test Report

Band	channel	TRP (dBm)	channel	TIS (dBm)	Band	channel	TRP (dBm)	channel	TIS (dBm)
LTE-B2	18650	19.84			LTE-B41	39750	20.34		
	18900	20.08				40620	20.72		
	19150	20.2	1150	-94.7		41490	20.41	41490	-88.79
LTE-B4	20000	17.22			LTE-B66	132022	17.38		
	20175	17.56				132322	17.58		
	20350	17.85	2350	-93.79		132622	17.67	67086	-92.51
LTE-B5	20450	17.78			LTE-B71	133172	15.03		
	20525	18.1				133297	16.68		
	20600	17.61	2600	-92.43		133422	16.28	68886	-90.12
LTE-B12	23035	15.49			GSM850	128	25.27		
	23095	15.47				190	25.96		
	23155	15.38	9435	-90.79		251	26.14	251	-101.76
LTE-B13	23230	15.83			EGSM900	1	25.77		
	23205	15.6				62	25.6		
	23255	15.86	5155	-92.76		124	25.56	124	-100.38
LTE-B17	23780	15.14			PCS1800	512	23.38		
	23790	15.29				699	24.51		
	23800	15.24	5255	-92.56		885	24.84	885	-102.16
LTE-B25	26065	18.49			PCS1900	512	23.85		
	26365	18.02				661	24.05		
	26665	18.47	5800	-96.26		810	24.83	810	-105.87
LTE-B26	26715	15.34			W2	9262	17.68		
	26865	15.73				9400	18.31		
	27015	16.16	8665	-95.34		9538	19.01	9938	-106.71
					W4	1312	15.11		
						1413	15.47		
						1513	15.73	1738	-106.56
					W5	4132	16.52		
						133297	16.68		
133422	16.28	68886	-90.12						

Passive efficiency

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	2.68	-15.73	-11.82	1700	17.74	-7.51	-3.18	2110	42.83	-3.68	-0.85
610	4.24	-13.73	-9.74	1710	17.92	-7.47	-3.25	2120	40.62	-3.91	-1.13
620	5.58	-12.53	-8.52	1720	20.13	-6.96	-2.84	2130	37.93	-4.21	-1.38
630	7.83	-11.06	-7.01	1730	21.58	-6.66	-2.27	2140	39.7	-4.01	-0.94
640	11.07	-9.56	-5.58	1740	22.14	-6.55	-1.91	2150	39.62	-4.02	-0.92
650	12.37	-9.03	-5.03	1750	26.11	-5.33	-1.08	2160	38.71	-4.12	-0.62
660	14.1	-8.51	-4.43	1760	29.83	-5.25	-0.5	2170	36.52	-4.37	-0.86
670	13.72	-8.63	-4.77	1770	30.04	-5.22	-0.52	2180	34.77	-4.59	-0.92
680	14.53	-8.38	-4.63	1780	34.01	-4.68	0	2190	34.88	-4.57	-0.96
690	18.43	-7.34	-3.8	1790	36.81	-4.34	0.28	2200	34.44	-4.63	-0.73
700	15.3	-8.15	-4.75	1800	38.44	-4.15	0.39	2210	33.94	-4.69	-0.77
710	11.42	-9.42	-5.62	1810	42.97	-3.67	0.78	2220	34.82	-4.58	-0.51
720	13.74	-8.62	-5.13	1820	43.63	-3.6	0.74	2230	36.52	-4.38	-0.16
730	16.37	-7.86	-4.94	1830	42.57	-3.71	0.54	2240	35.48	-4.5	-0.14
740	16.84	-7.74	-5.26	1840	44.1	-3.56	0.56	2250	34.65	-4.6	-0.43
750	16.89	-7.72	-5.71	1850	46.98	-3.23	0.87	2260	33.32	-4.77	-0.5
760	17.51	-7.57	-5.67	1860	46.94	-3.23	0.77	2270	31.02	-5.08	-0.8
770	16.85	-7.73	-5.63	1870	49.2	-3.08	0.94	2280	30.67	-5.13	-0.78
780	15.89	-7.99	-5.7	1880	46.69	-3.31	0.55	2290	31.81	-4.97	-0.59
790	16.94	-7.71	-5.13	1890	46.69	-3.31	0.59	2300	30.27	-5.19	-0.89
800	13.5	-8.7	-5.79	1900	48.21	-3.17	0.85	2310	27.87	-5.55	-1.51
810	10.66	-9.72	-6.46	1910	44.82	-3.49	0.6	2320	30.72	-5.13	-1.26
820	9.77	-10.1	-6.65	1920	43.41	-3.62	0.58	2330	29.14	-5.35	-1.66
830	12.47	-9.04	-5.36	1930	41.53	-3.82	0.5	2340	31.98	-4.95	-1.54
840	14.3	-8.45	-4.76	1940	39.12	-4.08	0.03	2350	33.47	-4.75	-1.54
850	12.76	-8.94	-5.47	1950	43.9	-3.58	0.54	2360	29.31	-5.33	-1.95
860	13.63	-8.64	-5.41	1960	47.76	-3.21	0.82	2370	25.77	-5.89	-2.28
870	16.6	-7.8	-4.7	1970	45.93	-3.38	0.54	2380	30.63	-5.14	-1.39
880	16.69	-7.78	-4.77	1980	44.64	-3.5	0.44	2390	27.62	-5.59	-1.78
890	21.55	-6.66	-3.57	1990	43.9	-3.11	0.69	2400	22.77	-6.43	-2.71
900	19.8	-7.02	-3.83	2000	42.53	-3.71	0.03	2410	26.21	-5.81	-2.25
910	17.66	-7.53	-4.13	2010	45.87	-3.39	0.48	2420	27.39	-5.62	-2.22
920	20.26	-6.93	-3.26	2020	48.36	-3.15	0.82	2430	29.92	-5.24	-1.91
930	20.53	-6.88	-3.06	2030	47.77	-3.21	1.04	2440	28.83	-5.4	-1.87
940	24.27	-6.15	-2.33	2040	48.08	-3.13	1.1	2450	25.68	-5.9	-2.32
950	22.19	-6.54	-2.85	2050	45.24	-3.44	0.73	2460	23.86	-6.22	-2.67
960	19.2	-7.17	-3.67	2060	44.08	-3.56	0.16	2470	25.91	-5.87	-2.03
970	18.4	-7.35	-4.05	2070	43.21	-3.64	-0.21	2480	27.06	-5.68	-1.24
980	18.11	-7.42	-4.2	2080	42.6	-3.71	-0.59	2490	27.82	-5.56	-0.86
990	15.5	-8.1	-4.58	2090	40.18	-3.96	-0.86	2500	26.23	-5.81	-1.27
1000	16.85	-7.73	-3.84	2100	40.28	-3.95	-1.1	2510	28.15	-5.51	-1.14
								2520	30.48	-5.16	-0.63
								2530	30.13	-5.21	-0.91
								2540	26.16	-5.82	-1.6
								2550	23.56	-6.28	-1.82
								2560	23.9	-6.22	-1.88
								2570	25.14	-6	-1.54
								2580	26.04	-5.84	-1.29
								2590	22.76	-6.43	-1.82
								2600	23.1	-6.36	-1.6
								2610	25.23	-5.98	-1.01
								2620	25.39	-5.95	-0.65
								2630	24.25	-6.15	-0.69
								2640	23.52	-6.29	-0.61
								2650	21.95	-6.59	-0.72
								2660	21.42	-6.69	-0.47
								2670	23.15	-6.35	0.12
								2680	22.01	-6.57	0.19
								2690	20.33	-6.92	-0.02
								2700	20.92	-6.79	0.39
								2710	22.81	-6.42	0.87
								2720	19.14	-7.18	-0.04
								2730	17.21	-7.64	-0.53
								2740	17.83	-7.49	-0.29
								2750	19.09	-7.19	-0.07

Field intensity pattern

