

The Main Antenna Sample Confirmation

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

Customer	SHENZHEN ALONG ELECTRONICS CO., LTD.		
Project Name	K23 (ALTAN)		2023-11-22
		Date	
Project NO.	SN1131		FPC
		Notes	
Frequency Range	2G:GSM850/EGSM900/PCS1800/PCS1900 3G:W1/W2/W4/W5/W8 4G:B2/B4/B7/28/B66		

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

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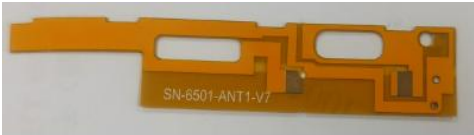
Catalogue

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1. Overview of specifications

This specification describes the status of K23 built-in antenna, and its frequency band is 4G.

2. Antenna appearance



ANT1



ANT2

3. Electrical performance

3.1. Antenna frequency band

	Main antenna
Transmitting frequency band(MHz)	2G:GSM850/EGSM900/PCS1800/PCS1900 3G:W1/W2/W4/W5/W8 4G:B2/B4/B7/28/B66

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.

V821	NC	MT	6.80K	R23	未安装	M1	33PF	R3	120R
M11	未安装	M5	0.0A	M3	NC	M2	150R	R4	1.00K
M12	33PF	M6	NC	M4	NC	M3	15.0PF	R5	NC
RF1	TX	GSM:900:WCDMA:W5							
RF2	TX	GSM:850/1800/1900:WCDMA:W1/2/4:LTE:B2/4/7/28/66							
RF2	TX	WCDMA:W5							
RF2	TX	GSM:850							
RF3	TX	LTE:B28							
RF4	TX								
RF4	TX								
V82042	NC	M34126	NC	M34121	NC	C101497	未安装	R8887	5.10K
M34130	未安装	C101496	NC	A10048	未安装	R8885	NC	R8886	0.0A
C101491	未安装	R10016	0.0A			R8889	120R	R8890	12.70K
RF1	TX	GSM:1800/1900:WCDMA:W1/2/4:LTE:B2/4/7/28/66							
RF1	TX	GSM:900:WCDMA:W6							
RF2	TX	GSM:850:WCDMA:W5							
RF3	TX	LTE:28							
RF4	TX								
RF4	TX								

4. Appearance structure

4.1. Antenna material FPC

Remarks

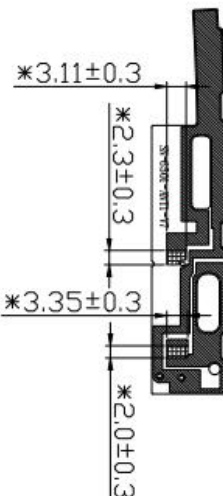
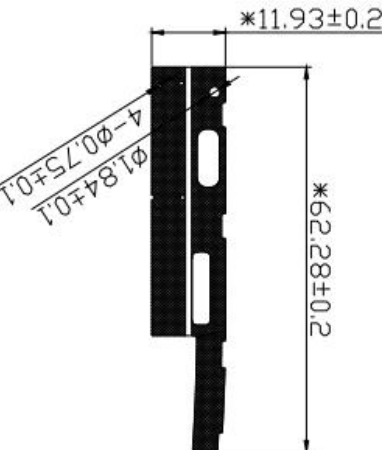
The following table format

Appendix I: structural drawings
BT Antenna structure drawing

Appendix 1: Structural Drawings

Appendix II: Electrical Performance Test Report

Appendix 1: FPC structural drawings

1	2	3	4	5	6	7	8																													
RoHS																																				
																																				
Notes: * is the key dimension ; - Please refer to the drawing if no dimension is indicated; - Meet rohs2.0, reach environmental protection requirements. - This drawing is an internal controlled document and is strictly prohibited from being disseminated in any form without our company's permission <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">No.</td><td style="width: 15%;">Part name</td><td style="width: 25%;">Material</td><td style="width: 15%;">Color</td><td style="width: 15%;">Thickness</td></tr> <tr> <td>1</td><td>ANTI FPC</td><td>PI Electrolytic Copper half to half substrate</td><td>Primary colours</td><td></td></tr> </table>								No.	Part name	Material	Color	Thickness	1	ANTI FPC	PI Electrolytic Copper half to half substrate	Primary colours																				
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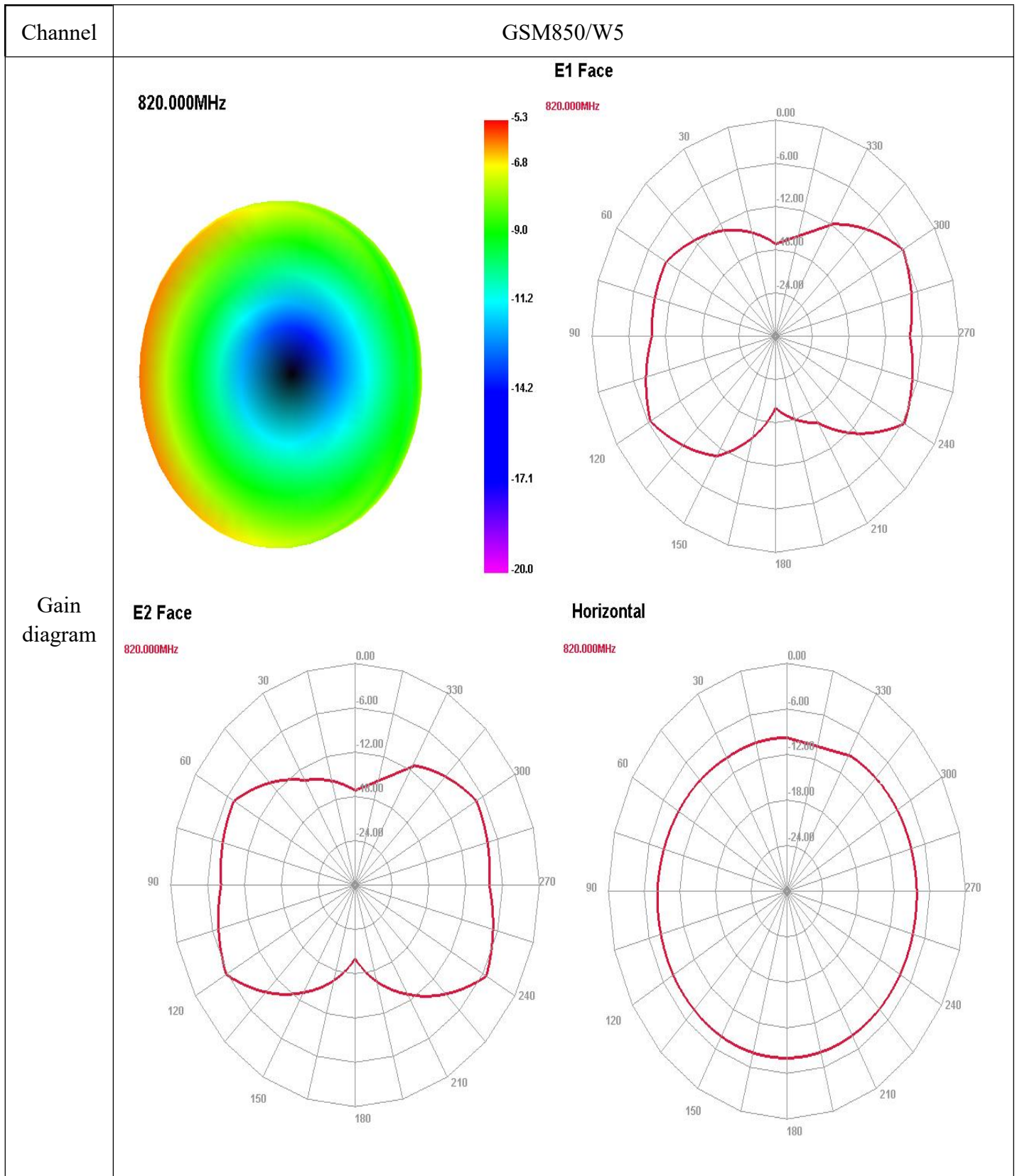
Appendix II: 3D Test Report

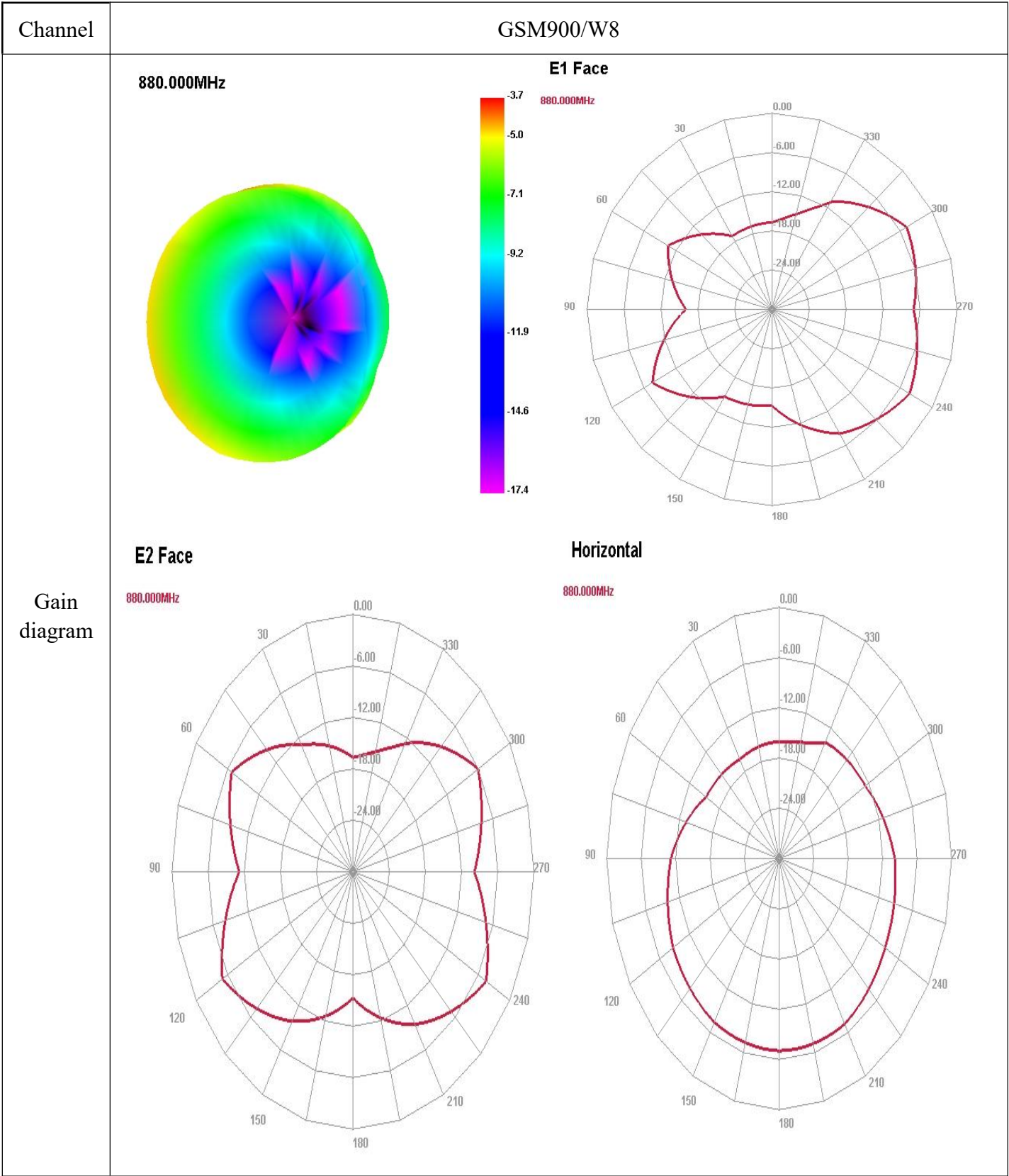
Band	channel	TRP (dBm)	channel	TIS (dBm)	Band	channel	TRP (dBm)	channel	TIS (dBm)
LTE-B2	18650	18.23			GSM850	128	27.23		
	18900	18.12				190	27.12		
	19150	18.21	1150	-90.45		251	25.67	251	-102.12
LTE-B4	20000	15.56			EGSM900	1	26.02		
	20175	16.23				62	25.03		
	20350	16.56	2350	-91.04		124	26.15	124	-100.65
LTE-B7	20850	16.39			PCS1800	512	23.44		
	21100	17.23				699	24.89		
	21350	17.14	3350	-90.7		885	26.02	885	-102.44
LTE-B28	27260	14.56			PCS1900	512	25.23		
	27435	15.08				661	25.14		
	27610	15.02	9435	-88.87		810	25.56	810	-103.32
LTE-B66	132022	15.44			W1	9612	19.05		
	132322	16.33				9750	19.03		
	132622	17.26	67086	-90.54		9888	18.33	10838	-103.18
					W2	9262	18.26		
						9400	18.07		
						9538	18.67	9938	-102.88
					W4	1312	15.79		
						1413	16.09		
						1513	16.61	1738	-102.89
					W5	4132	16.36		
						4183	16.59		
						4233	16.43	4458	-103.54
					W8	2712	15.98		
						2788	15.66		
						2863	15.45	3088	-103.22

Passive efficiency

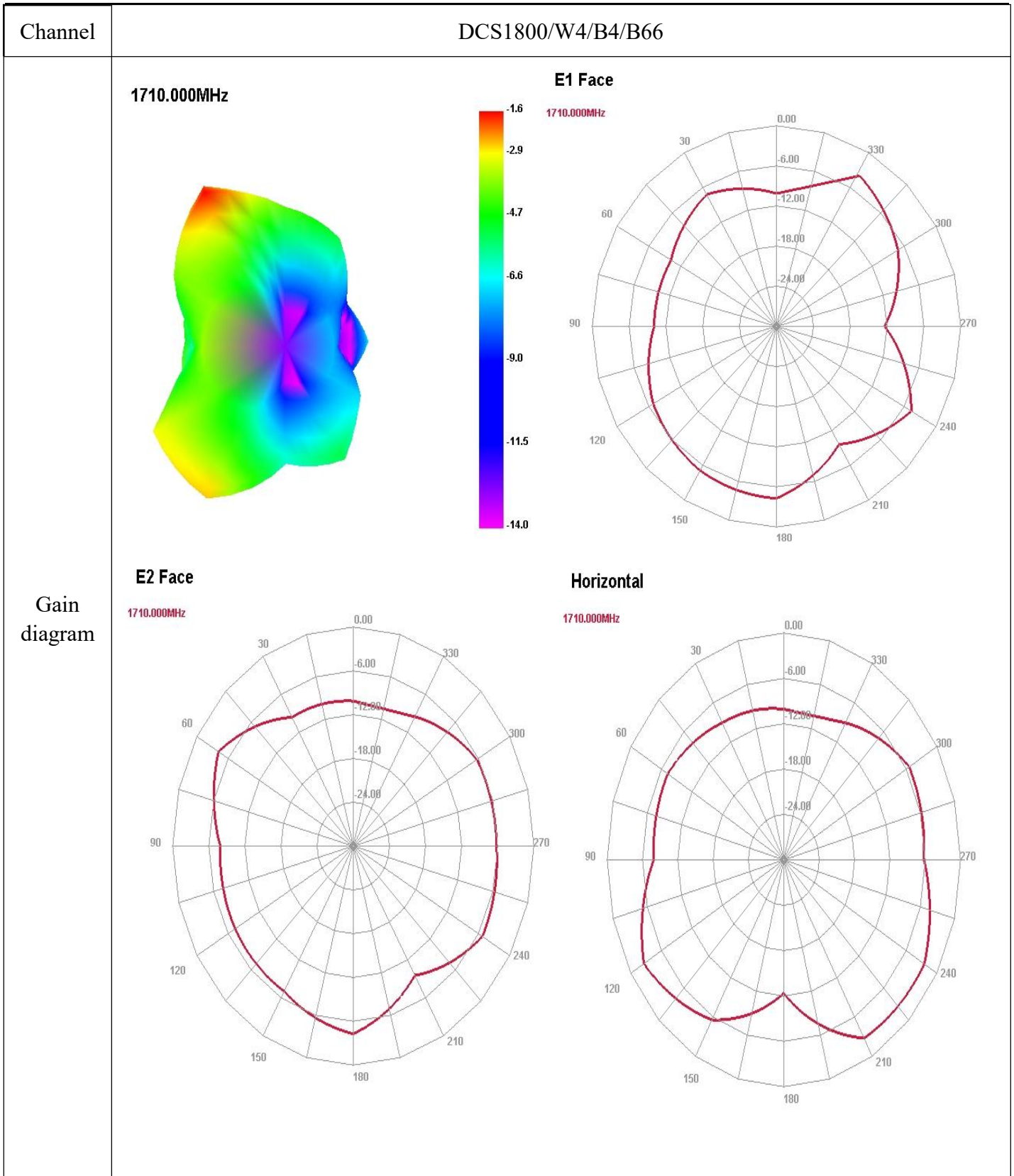
ANT1					ANT2							
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	8.08	-10.93	-8.45	-10.6	1700	28.03	-5.52	-1.48	2210	36.94	-4.33	1.82
610	10.06	-9.97	-7.84	-9.99	1710	25.82	-5.88	-1.63	2220	39.04	-4.08	1.98
620	12.72	-8.95	-6.66	-8.81	1720	29.56	-5.29	-0.95	2230	42.5	-3.72	2.25
630	16.39	-7.85	-4.97	-7.12	1730	30.65	-5.14	-1.05	2240	40.27	-3.95	1.88
640	19.03	-7.21	-3.77	-5.92	1740	31.65	-5	-0.98	2250	35.4	-4.51	1.17
650	18.78	-7.26	-3.22	-5.37	1750	35.74	-4.47	-0.69	2260	35.56	-4.49	1.02
660	15.92	-7.98	-3.66	-5.81	1760	39.75	-4.01	-0.63	2270	32.31	-4.91	0.43
670	15.9	-7.99	-3.63	-5.78	1770	39.65	-4.02	-0.73	2280	32.98	-4.82	0.41
680	16.92	-7.72	-3.4	-5.55	1780	43.15	-3.65	-0.28	2290	34.87	-4.58	0.62
690	22.32	-6.51	-2.29	-4.44	1790	46.18	-3.36	0.05	2300	30.4	-5.17	0.02
700	20.51	-6.88	-2.78	-4.93	1800	46.59	-3.32	0.11	2310	25.25	-5.98	-0.86
710	24.3	-6.14	-2	-4.15	1810	49.67	-3.04	0.31	2320	29.63	-5.28	-0.21
720	21.19	-6.74	-2.89	-5.04	1820	49.46	-3.06	0.14	2330	25.7	-5.9	-0.82
730	18.62	-7.3	-3.87	-6.02	1830	48.78	-3.12	-0.05	2340	29.69	-5.27	0.03
740	18.08	-7.43	-4.7	-6.85	1840	49.14	-3.09	-0.23	2350	31.36	-5.04	0.43
750	16.88	-7.73	-5.6	-7.75	1850	54.04	-2.67	0	2360	27.85	-5.55	-0.05
760	18.38	-7.36	-4.84	-6.99	1860	55	-2.6	0.12	2370	26.65	-5.74	-0.16
770	17.68	-7.53	-4.93	-7.08	1870	56.1	-2.51	0.63	2380	35.13	-4.54	1.09
780	16.79	-7.75	-5.16	-7.31	1880	53.66	-2.7	0.49	2390	28.75	-5.41	0.12
790	19.24	-7.16	-4.59	-6.74	1890	54.79	-2.61	0.72	2400	23.69	-6.25	-0.8
800	19.14	-7.18	-4.65	-6.8	1900	57.97	-2.37	1.25	2410	27.94	-5.54	-0.24
810	17.61	-7.54	-4.88	-7.03	1910	54.2	-2.66	0.99	2420	30.55	-5.15	0
820	15.34	-8.14	-5.34	-7.49	1920	52.87	-2.77	1.12	2430	35.41	-4.51	0.47
830	20.34	-6.92	-3.84	-5.99	1930	52.51	-2.8	1.37	2440	35.05	-4.55	0.32
840	23.97	-6.2	-2.92	-5.07	1940	51.91	-2.85	1.31	2450	31.56	-5.01	-0.28
850	22.15	-6.55	-3.19	-5.34	1950	56.99	-2.44	2	2460	30.64	-5.14	-0.43
860	24.26	-6.15	-2.78	-4.93	1960	60.03	-2.22	2.41	2470	34.25	-4.65	-0.05
870	30.26	-5.19	-1.82	-3.97	1970	58.09	-2.36	2.51	2480	34.46	-4.63	-0.21
880	16.67	-7.78	-3.67	-5.82	1980	56.13	-2.51	2.67	2490	35.9	-4.45	-0.11
890	20.45	-6.89	-2.64	-4.79	1990	62.43	-2.05	3.17	2500	35.16	-4.54	-0.05
900	25	-6.02	-1.7	-3.85	2000	57.45	-2.41	2.77	2510	39.28	-4.06	0.54
910	27.15	-5.66	-1.34	-3.49	2010	59.74	-2.24	3.15	2520	41.88	-3.78	0.6
920	32.11	-4.93	-0.5	-2.65	2020	58.91	-2.3	3.12	2530	43.8	-3.59	0.78
930	29.69	-5.27	-0.85	-3	2030	60.49	-2.18	3.43	2540	40.55	-3.92	0.37
940	28.54	-5.44	-1.07	-3.22	2040	61.38	-2.12	3.57	2550	37.88	-4.22	-0.09
950	22.65	-6.45	-2.14	-4.29	2050	58.38	-2.34	3.42	2560	39.2	-4.07	-0.03
960	15.98	-7.97	-3.67	-5.82	2060	56.59	-2.47	3.27	2570	41.69	-3.8	0.05
					2070	53.44	-2.72	3.12	2580	43.39	-3.63	0.28
					2080	49.98	-3.01	2.85	2590	39.03	-4.09	-0.16
					2090	49.23	-3.08	2.96	2600	38.24	-4.17	-0.01
					2100	44.55	-3.51	2.48	2610	40.53	-3.92	0.32
					2110	45.58	-3.41	2.67	2620	40.69	-3.91	0.26
					2120	47.49	-3.23	2.96	2630	40.77	-3.9	0.54
					2130	48.66	-3.13	3.12	2640	41.57	-3.81	0.8
					2140	50.32	-2.98	3.35	2650	38.44	-4.15	0.72
					2150	44.54	-3.51	2.82	2660	38.43	-4.15	0.79
					2160	41.94	-3.77	2.62	2670	41.06	-3.87	1.18
					2170	39.92	-3.99	2.36	2680	40.79	-3.89	1.23
					2180	39.92	-3.99	2.33	2690	39.5	-4.03	1.21
					2190	39.28	-4.06	2.14	2700	41.07	-3.86	1.33
					2200	39.26	-4.06	2.14				

Field intensity pattern





Confirmation of Sample



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