

Winmate Inc.

Antenna Specification

Project :M700DQ8
Version :20230111
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1. LTE Main Antenna Specification

Winmate Part Number: 90RF0100000P

1.1. Electrical Characteristics

Frequency(MHz): 700-960 / 1710-2170 / 2500-2690

SWR: $\leq 3.0:1$ typ. (with Enclosure)

Peak Gain: 3dBi typ. (with Enclosure)

Average Gain: -6/-6 dBi typ. (with Enclosure)

Impedance: 50ohm

Polarization: Linear

1.2. Mechanical Characteristics

Cable: 50Ω φ 0.81 RF cable

Connector: MHF4

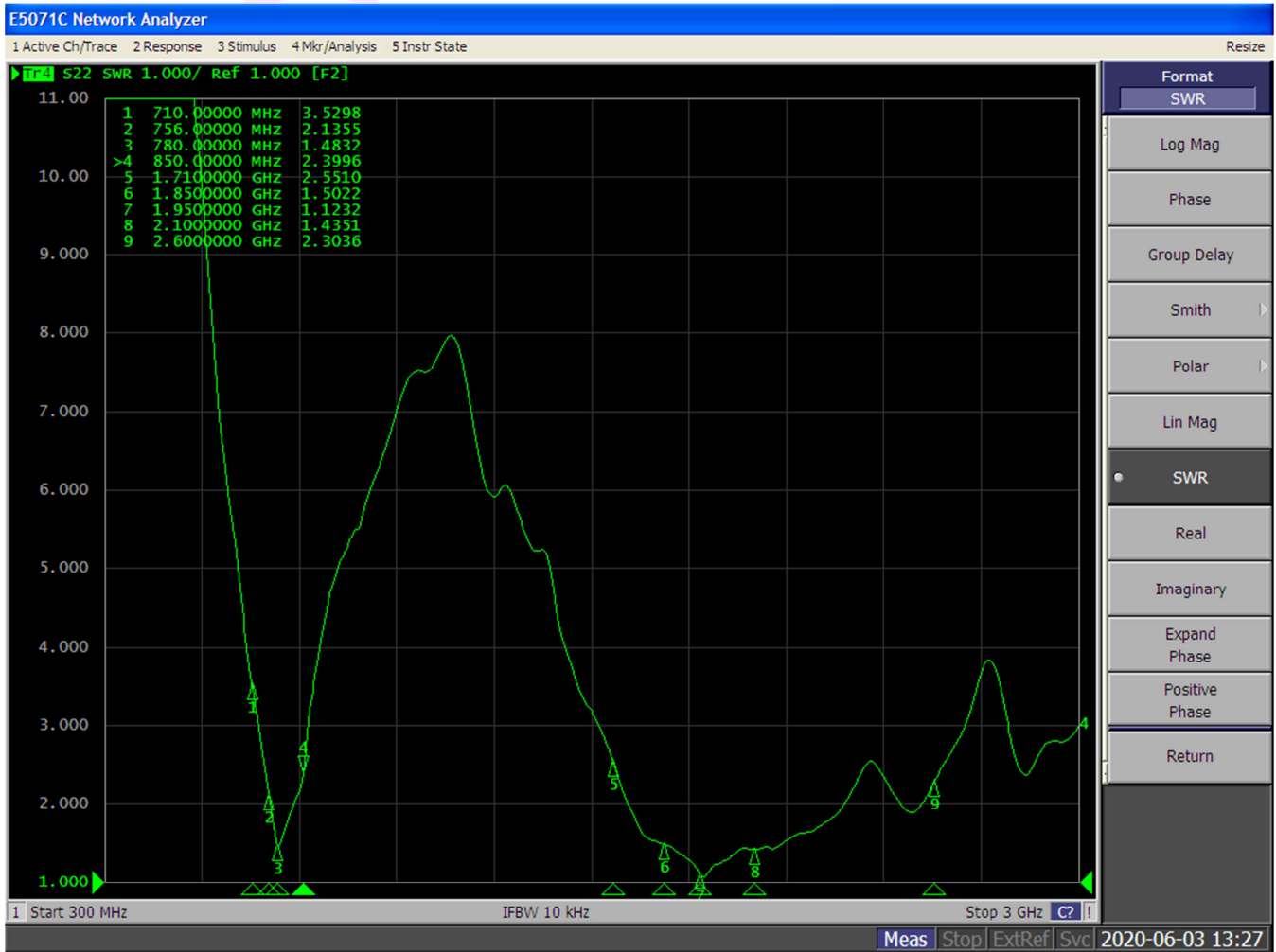
PCB:FPCB /Thickness 1.0mm

1.3. Environmental Characteristics

Operating Temperature: -30°C to 80°C

1.4. RF Performance Characteristics

1.4.1. SWR



1.4.2. Return Loss



1.4.3. Gain / Efficiency

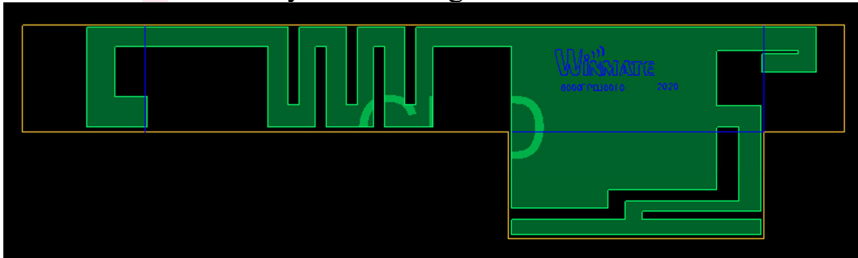
Frequency	703	729	748	782	803	824	832	847	869	880
Directivity (dBi)	4.10	3.97	3.67	3.98	3.52	3.52	3.43	3.41	3.32	3.27
Efficiency (dB)	-4.73	-4.08	-4.19	-4.10	-4.40	-4.72	-4.94	5.41	-6.15	-6.55
Efficiency (%)	33.64	39.02	38.08	38.81	36.24	33.70	32.05	28.76	24.21	22.09
Peak Gain (dBi)	-0.63	-0.10	-0.51	-0.12	-0.87	-1.19	-1.50	-1.99	-2.83	-3.27
Average Gain (dB)	-4.73	-4.08	-4.19	-4.10	-4.40	-4.72	-4.94	-5.41	-6.15	-6.55

Frequency	894	915	960	1710	1755	1785	1805	1880	1910	1930
Directivity (dBi)	3.34	3.60	3.54	5.10	5.67	4.75	4.38	4.26	3.94	3.99
Efficiency (dB)	-7.15	-8.33	-10.35	-3.93	-3.81	-3.64	-3.50	-2.74	-2.60	-2.51
Efficiency (%)	19.25	14.68	9.21	40.41	41.54	46.17	44.63	53.14	54.94	56.00
Peak Gain (dBi)	-3.80	-4.72	-6.81	1.16	1.85	1.10	0.88	1.52	1.34	1.47
Average Gain (dB)	-7.15	-8.33	-10.35	-3.93	-3.81	-3.64	-3.50	-2.74	-2.60	-2.51

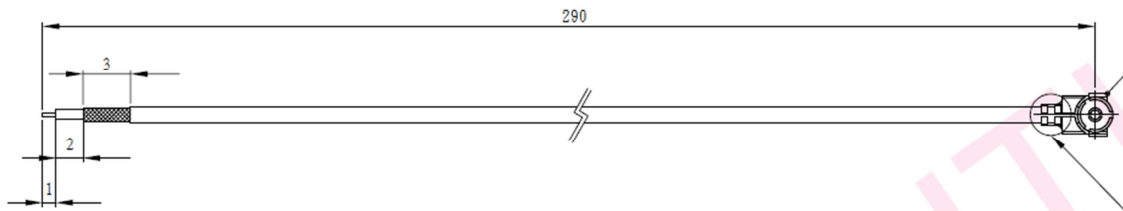
Frequency	1980	1990	2110	2155	2170	2500	2690
Directivity (dBi)	5.50	5.73	5.41	5.18	4.65	6.13	4.35
Efficiency (dB)	-2.75	-2.81	-3.73	-4.51	-4.51	-6.28	-6.44
Efficiency (%)	53.02	52.34	42.28	35.38	35.36	23.51	22.68
Peak Gain (dBi)	2.74	2.92	1.67	0.67	0.13	-0.14	-2.08
Average Gain (dB)	-2.75	-2.81	-3.73	-4.51	-4.51	-6.28	-6.44

1.5. Drawing

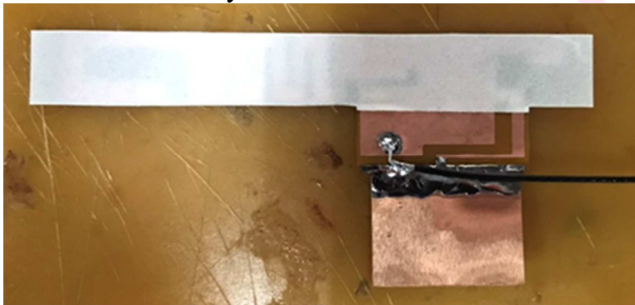
LTE Main Antenna Layout Drawing



RF Cable Drawing



Antenna Assembly



Winmate Part Number: 90RF01000017

2. LTE Aux Antenna Specification

Winmate Part Number: 90RF0200000Q

2.1. Electrical Characteristics

Frequency(MHz): 700-960 / 1710-2170 / 2500-2690

SWR: $\leq 5.5:1$ typ. (with Enclosure)

Peak Gain: 2dBi typ. (with Enclosure)

Average Gain: -4/-4 dBi typ. (with Enclosure)

Impedance: 50ohm

Polarization: Linear

2.2. Mechanical Characteristics

Cable: 50Ω φ 0.81 RF cable

Connector: MHF4

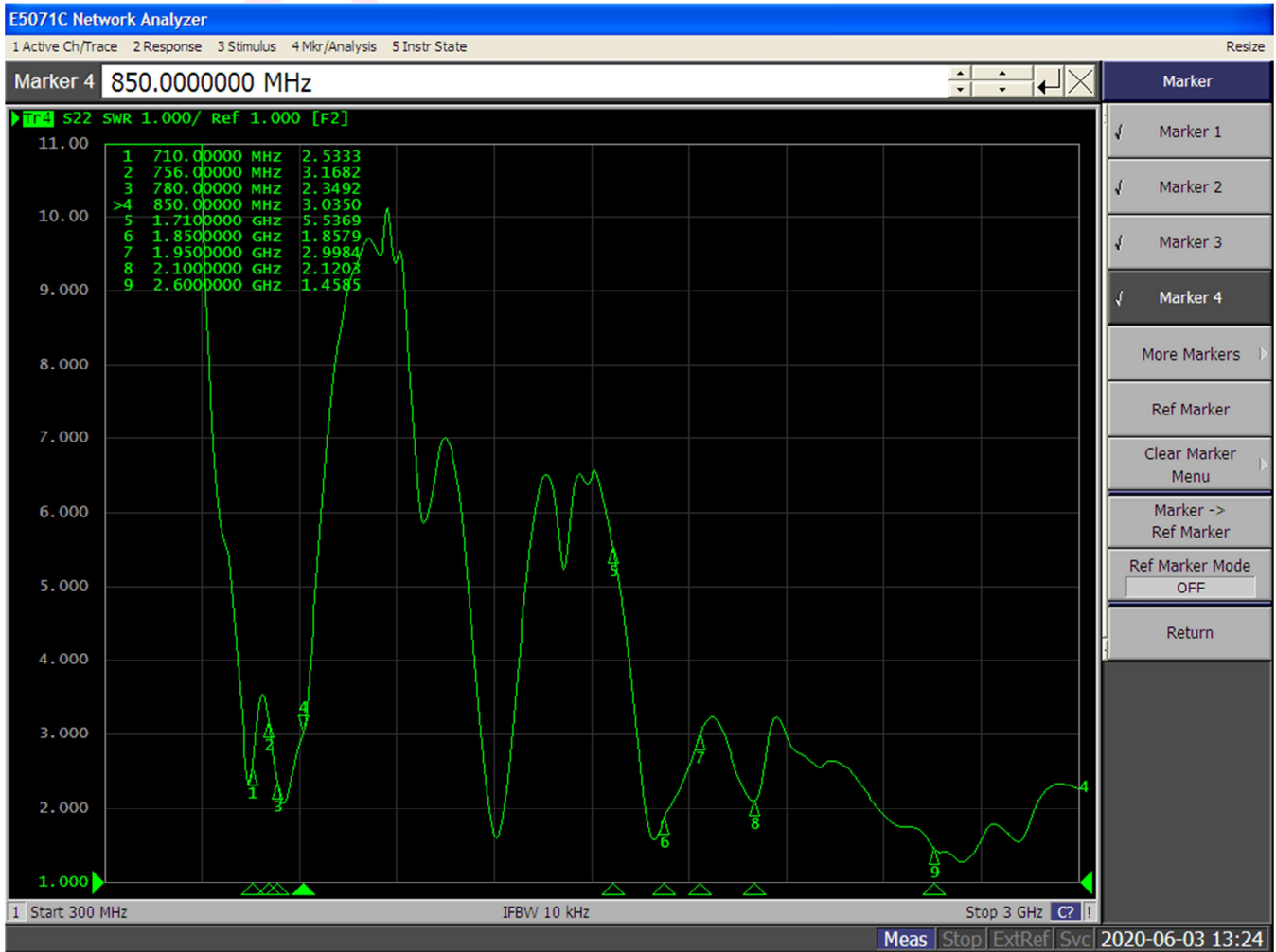
PCB: FR4 /Thickness 1.6mm

2.3. Environmental Characteristics

Operating Temperature: -30°C to 80°C

2.4. RF Performance Characteristics

2.4.1. SWR



2.4.2. Return Loss



2.4.3. Gain / Efficiency

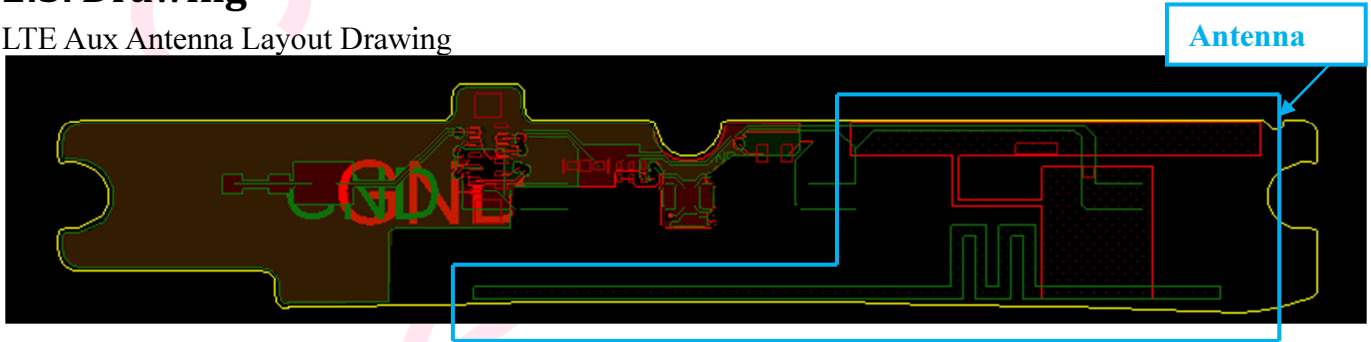
Frequency	698	729	738	746	751	859	869	877	882	894
Directivity (dBi)	3.93	4.51	4.62	-4.66	4.69	5.19	5.27	5.27	5.21	5.14
Efficiency (dB)	-6.69	-4.40	-4.04	-3.82	3.79	-5.20	-5.13	-5.13	-5.15	-5.38
Efficiency (%)	21.38	36.25	39.42	41.41	41.76	30.13	30.67	30.62	30.51	28.96
Gain (dBi)	-2.75	0.10	0.58	0.83	0.89	-0.01	0.14	0.13	0.06	-0.23
Average Gain (dB)	-6.69	-4.40	-4.04	-3.82	-3.79	-5.20	-5.13	-5.13	-5.15	-5.38

Frequency	1930	1960	1963	1990	1995	2110	2133	2155	2350	2355
Directivity (dBi)	4.65	5.18	5.22	5.20	5.26	5.48	6.19	6.19	5.41	5.39
Efficiency (dB)	-6.11	-6.81	-6.83	-6.90	-6.88	-5.79	-5.82	-5.46	-4.47	-4.52
Efficiency (%)	24.47	20.80	20.74	20.37	20.47	26.35	26.14	28.42	35.67	35.27
Gain (dBi)	-1.45	-1.63	-1.60	-1.70	-1.61	-0.30	0.36	0.73	0.94	0.87
Average Gain (dB)	-6.11	-6.81	-6.83	-6.90	-6.88	-5.79	-5.82	-5.46	-4.47	-4.52

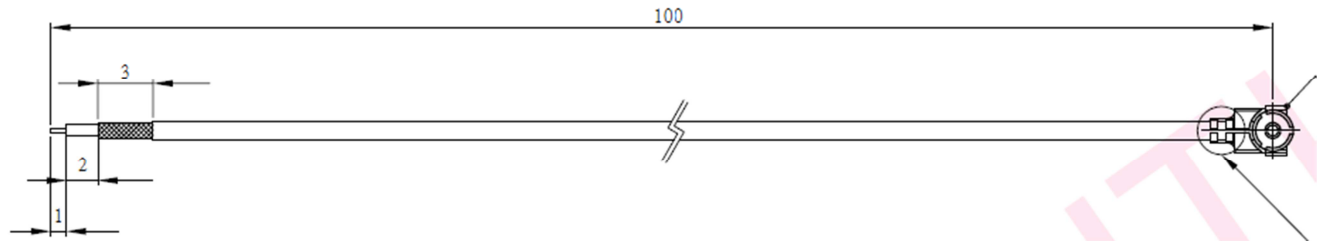
Frequency	2360	2496	2500	2570	2620
Directivity (dBi)	5.69	7.10	6.88	6.38	5.88
Efficiency (dB)	-4.53	-5.60	-5.43	-7.18	-6.79
Efficiency (%)	35.18	27.52	28.62	19.12	20.89
Gain (dBi)	1.15	1.50	1.45	-0.80	-0.91
Average Gain (dB)	-4.53	-5.60	-5.43	-7.18	-6.79

2.5. Drawing

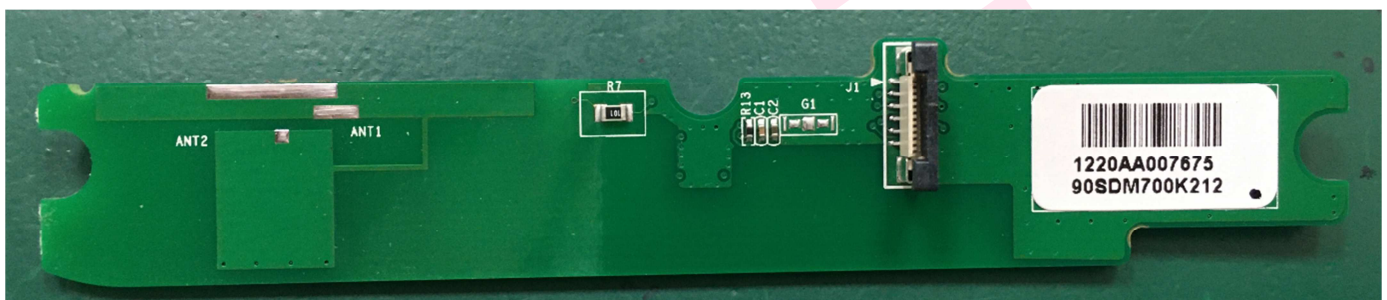
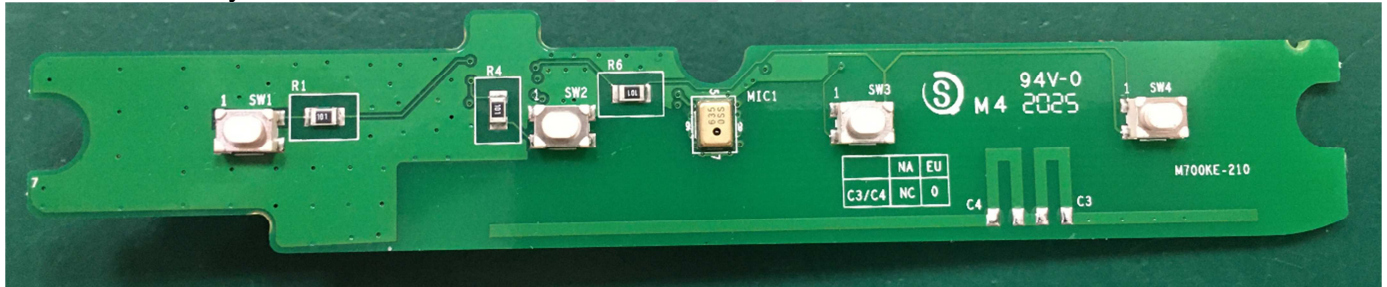
LTE Aux Antenna Layout Drawing



RF Cable Drawing



Antenna Assembly



Winmate Part Number: 90SDM700K212