

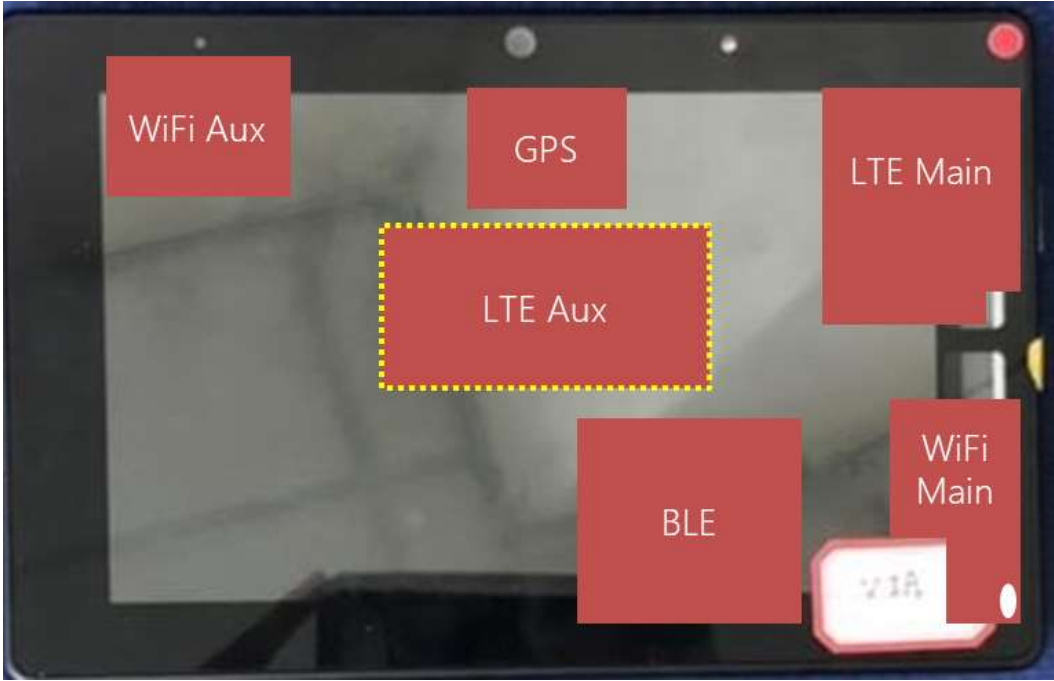


IVT-01 Project LTE/WiFi/BLE

Revision History

Released Date	Version	Record
Oct. 5 th , 2021	0.0	Initial assesment
Nov. 18th , 2021	1.0	New cable routing simulation, Add LTE Aux ant.
Feb. 10th , 2022	1.1	Add ant. peak gain and Horizontal & Vertical planes

Product Overview & Dimension



Antenna	ANT Type	Size (L * W * H)	Cable Length (mm)	Cable Type
LTE Main	PCB	31*64*0.8mm	105mm	Φ=1.13 normal
LTE Aux	PCB	29*57*0.8mm	135mm	Φ=1.13 normal
WiFi Main	PCB	37.8*19*0.8mm	185mm	Φ=1.13 normal
WiFi Aux	PCB	36*25*0.8mm	182mm	Φ=1.13 normal
BLE	PCB	38*30*0.8mm	176mm	Φ=1.13 normal

Results Summary

◆ Antenna efficiency & gain

LTE Main					
Frequency (MHz)	Efficiency (%)	Average gain (dBi)	Frequency (MHz)	Efficiency (%)	Average gain (dBi)
814	38.93	-4.10	915	56.41	-2.49
821	43.00	-3.67	925	56.08	-2.51
830	45.92	-3.38	940	55.63	-2.55
832	48.66	-3.13	960	50.89	-2.93
837	52.00	-2.84	1710	54.67	-2.62
845	55.61	-2.55	1750	49.97	-3.01
849	56.85	-2.45	1785	49.56	-3.05
859	62.04	-2.07	1805	51.16	-2.91
868	61.88	-2.08	1840	56.41	-2.49
875	61.80	-2.09	1880	54.27	-2.65
877	61.56	-2.11	1920	48.88	-3.11
880	60.69	-2.17	1950	44.00	-3.57
882	59.95	-2.22	1980	50.86	-2.94
890	56.46	-2.48	2110	40.04	-3.98
894	56.91	-2.45	2140	33.19	-4.79
900	56.44	-2.48	2170	23.81	-6.23

Results Summary

◆ Antenna efficiency & gain

LTE Aux					
Frequency (MHz)	Efficiency (%)	Average gain (dBi)	Frequency (MHz)	Efficiency (%)	Average gain (dBi)
814	46.56	-3.32	915	50.81	-2.94
821	44.54	-3.51	925	47.32	-3.25
830	41.57	-3.81	940	36.21	-4.41
832	43.18	-3.65	960	20.83	-6.81
837	43.84	-3.58	1710	34.17	-4.66
845	43.19	-3.65	1750	37.16	-4.30
849	41.88	-3.78	1785	32.78	-4.84
859	41.95	-3.77	1805	27.44	-5.62
868	36.92	-4.33	1840	24.82	-6.05
875	29.86	-5.25	1880	24.08	-6.18
877	28.61	-5.43	1920	24.67	-6.08
880	27.31	-5.64	1950	27.86	-5.55
882	27.24	-5.65	1980	27.61	-5.59
890	33.16	-4.79	2110	38.88	-4.10
894	37.64	-4.24	2140	41.97	-3.77
900	44.83	-3.48	2170	41.03	-3.87

Results Summary

◆ Antenna efficiency & gain

Frequency (MHz)	BLE		Frequency (MHz)	WiFi Main		WiFi Aux	
	Efficiency (%)	Average gain (dBi)		Efficiency (%)	Average gain (dBi)	Efficiency (%)	Average gain (dBi)
2400	43.92	-3.57	2400	49.23	-3.08	49.42	-3.06
2450	43.33	-3.63	2450	50.51	-2.97	44.01	-3.57
2500	42.05	-3.76	2500	55.11	-2.59	42.97	-3.68
			5150	55.34	-2.57	57.84	-2.38
			5250	52.78	-2.78	58.73	-2.31
			5350	54.25	-2.66	57.59	-2.40
			5470	56.50	-2.48	56.52	-2.48
			5600	52.73	-2.78	54.70	-2.62
			5725	52.13	-2.83	53.16	-2.74
			5785	52.98	-2.76	52.84	-2.77
			5850	51.19	-2.91	50.12	-3.00

Results Summary

◆ Antenna peak gain

LTE Main			
Frequency (MHz)	Peak Gain Data (dBi)	Frequency (MHz)	Peak Gain Data (dBi)
814	2.40	915	2.81
821	2.71	925	2.86
830	2.78	940	2.87
832	2.00	960	2.07
837	2.22	1710	2.75
845	2.41	1750	2.20
849	2.42	1785	2.40
859	2.54	1805	1.77
868	2.18	1840	1.68
875	1.86	1880	1.99
877	2.76	1920	2.11
880	2.55	1950	1.86
882	2.39	1980	2.05
890	1.92	2110	2.58
894	2.10	2140	2.14
900	2.33	2170	2.47

Results Summary

◆ Antenna peak gain

LTE Aux			
Frequency (MHz)	Peak Gain Data (dBi)	Frequency (MHz)	Peak Gain Data (dBi)
814	2.16	915	2.96
821	1.90	925	2.40
830	2.46	940	1.02
832	2.60	960	1.09
837	2.58	1710	1.48
845	2.41	1750	1.71
849	2.19	1785	1.77
859	1.98	1805	2.00
868	2.14	1840	2.30
875	2.17	1880	2.45
877	2.01	1920	2.46
880	1.85	1950	2.62
882	1.86	1980	2.41
890	1.74	2110	2.67
894	2.19	2140	2.43
900	2.81	2170	2.64

Results Summary

◆ Antenna peak gain

Frequency (MHz)	BLE	Frequency (MHz)	WiFi Main	WiFi Aux
	Peak Gain Data (dBi)		Peak Gain Data (dBi)	Peak Gain Data (dBi)
2400	2.28	2400	2.58	2.22
2450	2.25	2450	2.46	2.38
2500	2.26	2500	2.84	2.69
		5150	2.21	2.63
		5250	2.34	2.58
		5350	1.98	2.06
		5470	1.70	1.76
		5600	2.88	1.35
		5725	2.79	2.49
		5785	2.67	2.40
		5850	2.86	2.60

Summary

➤ Efficiency

- 1.LTE Main antenna Low band >38%, High band>23%
- 2.LTE Aux antenna Low band >27%, High band>24%
- 3.BLE antenna 2.4G >42%
- 4.WiFi Main antenna 2.4G >49%, 5G>51%
- 5.WiFi Aux antenna 2.4G >42%, 5G>50%

➤ Isolation

<-15dB