



Appendix I for 5.8G WIFI RF Test Data

Product Name: Smartphone

Test Model: KINGKONG ES PRO

Environmental Conditions

Temperature:	23.0° C
Relative Humidity:	53.0%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng



I.1 Equivalent Isotropically Radiated Power (EIRP)

EIRP(802.11a)---Transmitter					
Temperature (°C)	Power Supplied (V)	Test Result (EIRP, dBm)			Limit dBm
		Channel 149	Channel 157	Channel 165	
TL	VL	11.19	11.35	10.97	14
	VN	11.18	11.39	11.31	14
	VH	11.04	11.08	11.03	14
TN	VL	11.07	10.97	11.02	14
	VN	11.56	11.54	11.52	14
	VH	11.00	11.35	11.18	14
TH	VL	11.38	11.34	11.01	14
	VN	11.26	11.10	11.32	14
	VH	11.27	11.28	11.27	14

EIRP(802.11n20)---Transmitter					
Temperature (°C)	Power Supplied (V)	Test Result (EIRP, dBm)			Limit dBm
		Channel 149	Channel 157	Channel 165	
TL	VL	11.09	10.78	10.77	14
	VN	11.16	11.04	10.84	14
	VH	11.07	10.96	10.71	14
TN	VL	10.84	11.05	11.00	14
	VN	11.43	11.41	11.39	14
	VH	10.87	11.04	11.29	14
TH	VL	11.11	11.05	10.73	14
	VN	10.90	10.86	11.28	14
	VH	10.97	10.85	11.09	14



EIRP(802.11ac20)---Transmitter					
Temperature (°C)	Power Supplied (V)	Test Result (EIRP, dBm)			Limit dBm
		Channel 149	Channel 157	Channel 165	
TL	VL	11.24	11.00	10.67	14
	VN	11.14	10.87	10.87	14
	VH	11.16	10.94	11.09	14
TN	VL	10.75	11.22	11.08	14
	VN	11.38	11.36	11.35	14
	VH	11.18	10.84	11.14	14
TH	VL	10.99	10.76	10.99	14
	VN	11.00	11.04	10.92	14
	VH	10.77	10.73	11.15	14

EIRP(802.11n40)---Transmitter				
Temperature (°C)	Power Supplied (V)	Test Result (EIRP, dBm)		Limit dBm
		Channel 151	Channel 159	
TL	VL	11.46	11.42	14
	VN	11.71	11.19	14
	VH	11.62	11.22	14
TN	VL	11.69	11.32	14
	VN	11.86	11.85	14
	VH	11.66	11.43	14
TH	VL	11.27	11.74	14
	VN	11.31	11.38	14
	VH	11.54	11.26	14



EIRP(802.11ac40)---Transmitter				
Temperature (°C)	Power Supplied (V)	Test Result (EIRP, dBm)		Limit dBm
		Channel 151	Channel 159	
TL	VL	11.20	11.29	14
	VN	11.68	11.17	14
	VH	11.23	11.23	14
TN	VL	11.27	11.21	14
	VN	11.83	11.81	14
	VH	11.23	11.61	14
TH	VL	11.40	11.27	14
	VN	11.68	11.66	14
	VH	11.69	11.20	14

EIRP(802.11ac80)---Transmitter			
Temperature (°C)	Power Supplied (V)	Test Result (EIRP, dBm)	Limit dBm
		Channel 155	
TL	VL	11.85	14
	VN	12.05	14
	VH	11.65	14
TN	VL	11.82	14
	VN	12.19	14
	VH	11.82	14
TH	VL	11.98	14
	VN	11.57	14
	VH	11.93	14



I.2 Permitted Range of Operating Frequencies

802.11a---Transmitter			
Test Conditions		Frequency (MHz) at -30dBm/30KHz	
Temperature	Voltage(V)	fL at Low Channel >5725MHz	fH at High Channel (<5875MHz)
TL	VL	5728.70	5832.62
	VN	5728.39	5833.16
	VH	5728.54	5832.84
TN	VL	5728.75	5832.93
	VN	5729.08	5833.31
	VH	5728.63	5833.14
TH	VL	5728.39	5832.71
	VN	5728.80	5832.81
	VH	5728.63	5832.70
Limit	fH(5875MHz) - fL(5725MHz) = 150MHz		

802.11n20---Transmitter			
Test Conditions		Frequency (MHz) at -30dBm/30KHz	
Temperature	Voltage(V)	fL at Low Channel >5725MHz	fH at High Channel (<5875MHz)
TL	VL	5728.40	5832.90
	VN	5728.69	5832.94
	VH	5728.54	5832.75
TN	VL	5728.89	5833.15
	VN	5729.08	5833.31
	VH	5728.96	5833.14
TH	VL	5728.51	5832.96
	VN	5728.85	5833.00
	VH	5728.92	5832.91
Limit	fH(5875MHz) - fL(5725MHz) = 150MHz		



802.11ac20---Transmitter			
Test Conditions		Frequency (MHz) at -30dBm/30KHz	
Temperature	Voltage(V)	fL at Low Channel >5725MHz	fH at High Channel (<5875MHz)
TL	VL	5728.95	5833.17
	VN	5728.79	5832.90
	VH	5728.90	5833.06
TN	VL	5728.91	5832.92
	VN	5729.08	5833.31
	VH	5728.47	5833.19
TH	VL	5728.74	5832.94
	VN	5728.61	5832.87
	VH	5728.44	5832.99
Limit	fH(5875MHz) - fL(5725MHz) = 150MHz		

802.11n40---Transmitter			
Test Conditions		Frequency (MHz) at -30dBm/30KHz	
Temperature	Voltage(V)	fL at Low Channel >5725MHz	fH at High Channel (<5875MHz)
TL	VL	5736.43	5813.21
	VN	5736.18	5813.22
	VH	5736.22	5813.11
TN	VL	5736.34	5812.73
	VN	5736.55	5813.36
	VH	5736.34	5812.75
TH	VL	5736.01	5812.70
	VN	5736.09	5812.86
	VH	5735.91	5812.79
Limit	fH(5875MHz) - fL(5725MHz) = 150MHz		



802.11ac40---Transmitter			
Test Conditions		Frequency (MHz) at -30dBm/30KHz	
Temperature	Voltage(V)	fL at Low Channel >5725MHz	fH at High Channel (<5875MHz)
TL	VL	5736.35	5812.88
	VN	5736.12	5812.88
	VH	5736.11	5812.82
TN	VL	5735.85	5813.16
	VN	5736.55	5813.36
	VH	5736.17	5812.74
TH	VL	5736.40	5813.07
	VN	5735.99	5812.74
	VH	5736.25	5813.07
Limit	fH(5875MHz) - fL(5725MHz) = 150MHz		

802.11ac80---Transmitter			
Test Conditions		Frequency (MHz) at -30dBm/30KHz	
Temperature	Voltage(V)	fL at Low Channel >5725MHz	fH at High Channel (<5875MHz)
TL	VL	5735.53	5813.34
	VN	5735.62	5813.53
	VH	5735.75	5813.56
TN	VL	5735.77	5813.73
	VN	5736.12	5813.96
	VH	5735.71	5813.75
TH	VL	5735.51	5813.45
	VN	5735.99	5813.31
	VH	5735.51	5813.72
Limit	fH(5875MHz) - fL(5725MHz) = 150MHz		



I.3 Unwanted Emissions in the Spurious Domain

Test Result of Unwanted Emissions In The Spurious Domain (802.11a)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
80.30	Vertical	-56.37	-36.00	Pass
287.91	V	-62.52	-36.00	
11490.00	V	-46.93	-30.00	
17235.00	V	-45.26	-30.00	
171.27	Horizontal	-60.23	-36.00	
533.13	H	-60.59	-54.00	
11490.00	H	-45.42	-30.00	
17235.00	H	-44.26	-30.00	
Middle Channel				
83.02	Vertical	-59.68	-36.00	Pass
298.33	V	-62.85	-36.00	
11570.00	V	-46.16	-30.00	
17355.00	V	-45.85	-30.00	
173.18	Horizontal	-58.60	-36.00	
532.62	H	-62.79	-54.00	
11570.00	H	-44.54	-30.00	
17355.00	H	-44.04	-30.00	
Highest Channel				
91.13	Vertical	-59.70	-54.00	Pass
275.98	V	-61.08	-36.00	
11650.00	V	-45.69	-30.00	
17475.00	V	-46.15	-30.00	
176.89	Horizontal	-60.68	-54.00	
562.09	H	-61.37	-54.00	
11650.00	H	-46.82	-30.00	
17475.00	H	-42.95	-30.00	



Test Result of Unwanted Emissions In The Spurious Domain (802.11n20)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
83.75	Vertical	-58.22	-36.00	Pass
287.83	V	-62.04	-36.00	
11490.00	V	-46.82	-30.00	
17235.00	V	-44.25	-30.00	
170.54	Horizontal	-58.35	-36.00	
533.67	H	-61.24	-54.00	
11490.00	H	-43.15	-30.00	
17235.00	H	-44.41	-30.00	
Middle Channel				
87.44	Vertical	-61.35	-36.00	Pass
297.92	V	-63.20	-36.00	
11570.00	V	-47.00	-30.00	
17355.00	V	-43.29	-30.00	
174.92	Horizontal	-58.99	-54.00	
528.72	H	-60.35	-54.00	
11570.00	H	-44.93	-30.00	
17355.00	H	-43.66	-30.00	
Highest Channel				
91.82	Vertical	-60.78	-54.00	Pass
278.58	V	-62.17	-36.00	
11650.00	V	-44.98	-30.00	
17475.00	V	-45.96	-30.00	
178.45	Horizontal	-59.03	-54.00	
561.55	H	-58.75	-54.00	
11650.00	H	-46.96	-30.00	
17475.00	H	-42.54	-30.00	



Test Result of Unwanted Emissions In The Spurious Domain (802.11ac20)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
83.39	Vertical	-56.91	-36.00	Pass
285.88	V	-60.11	-36.00	
11490.00	V	-46.09	-30.00	
17235.00	V	-46.05	-30.00	
166.93	Horizontal	-60.43	-36.00	
532.62	H	-59.26	-54.00	
11490.00	H	-45.59	-30.00	
17235.00	H	-44.25	-30.00	
Middle Channel				
87.71	Vertical	-62.04	-54.00	Pass
297.82	V	-62.40	-36.00	
11570.00	V	-45.27	-30.00	
17355.00	V	-45.09	-30.00	
176.94	Horizontal	-59.55	-54.00	
529.11	H	-62.29	-54.00	
11570.00	H	-43.92	-30.00	
17355.00	H	-42.55	-30.00	
Highest Channel				
90.46	Vertical	-59.52	-54.00	Pass
276.04	V	-61.40	-36.00	
11650.00	V	-46.31	-30.00	
17475.00	V	-45.10	-30.00	
177.28	Horizontal	-58.27	-54.00	
560.41	H	-58.72	-54.00	
11650.00	H	-47.36	-30.00	
17475.00	H	-44.67	-30.00	



Test Result of Unwanted Emissions In The Spurious Domain (802.11n40)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
87.96	Vertical	-62.04	-54.00	Pass
297.56	V	-64.57	-36.00	
11510.00	V	-46.08	-30.00	
17265.00	V	-45.64	-30.00	
173.07	Horizontal	-57.60	-36.00	
536.49	H	-63.37	-54.00	
11510.00	H	-44.95	-30.00	
17265.00	H	-45.00	-30.00	
Highest Channel				
91.96	Vertical	-61.35	-54.00	Pass
280.59	V	-61.25	-36.00	
11590.00	V	-45.62	-30.00	
17385.00	V	-46.42	-30.00	
180.03	Horizontal	-58.18	-54.00	
568.60	H	-60.07	-54.00	
11590.00	H	-45.20	-30.00	
17385.00	H	-44.47	-30.00	



Test Result of Unwanted Emissions In The Spurious Domain (802.11ac40)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
89.72	Vertical	-60.05	-54.00	Pass
301.38	V	-62.20	-36.00	
11510.00	V	-45.81	-30.00	
17265.00	V	-45.93	-30.00	
172.13	Horizontal	-57.93	-36.00	
535.32	H	-61.47	-54.00	
11510.00	H	-46.23	-30.00	
17265.00	H	-43.18	-30.00	
Highest Channel				
96.29	Vertical	-59.96	-54.00	Pass
279.49	V	-62.99	-36.00	
11590.00	V	-45.55	-30.00	
17385.00	V	-46.00	-30.00	
179.97	Horizontal	-60.57	-54.00	
563.17	H	-59.10	-54.00	
11590.00	H	-45.01	-30.00	
17385.00	H	-44.69	-30.00	

Test Result of Unwanted Emissions In The Spurious Domain (802.11ac80)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
94.82	Vertical	-59.97	-54.00	Pass
283.32	V	-63.40	-36.00	
11550.00	V	-44.82	-30.00	
17325.00	V	-44.12	-30.00	
177.13	Horizontal	-59.98	-54.00	
563.41	H	-61.04	-54.00	
11550.00	H	-45.44	-30.00	
17325.00	H	-44.98	-30.00	



I.4 Adjacent Channel Selectivity

Receiver category: 1								
Test Channel (Worst Case)		The signal of adjacent channel(signal generator B)						
		Adjacent channel		BW (MHz)	K (dB)	Test Value (dBm)	Limit (dBm)	Verdict
157	5785MHz	153	5765MHz(lower)	20	-28.26	-49.41	≥-58.26	Pass
		161	5805MHz(upper)	20	-28.26	-49.42	≥-58.26	Pass
151	5755MHz	/	5715MHz(lower)	40	-31.22	-59.43	≥-61.22	Pass
		159	5805MHz(upper)	40	-31.22	-59.45	≥-61.22	Pass

Note: The BW(channel bandwidth) is declared by the manufacturer of the equipment.



I.5 Blocking or Desensitization

Receiver category: 1									
Test Channel (Worst Case)		Lower or upper	Spacing	Frequency (MHz)	BW (MHz)	K (dB)	Test Value (dBm)	Limit (dBm)	Verdict
157	5785MHz	Lower	10*BW	5575	20	-28.26	-37.50	≥-58.26	Pass
			20*BW	5375	20	-28.26	-30.43	≥-58.26	Pass
			50*BW	4775	20	-28.26	-24.50	≥-58.26	Pass
		Upper	10*BW	5995	20	-28.26	-37.42	≥-58.26	Pass
			20*BW	6195	20	-28.26	-30.44	≥-58.26	Pass
			50*BW	6795	20	-28.26	-24.49	≥-58.26	Pass
151	5755MHz	Lower	10*BW	5325	40	-31.22	-37.45	≥-61.22	Pass
			20*BW	4925	40	-31.22	-30.50	≥-61.22	Pass
			50*BW	3725	40	-31.22	-24.50	≥-61.22	Pass
		Upper	10*BW	6175	40	-31.22	-37.48	≥-61.22	Pass
			20*BW	6575	40	-31.22	-30.44	≥-61.22	Pass
			50*BW	7775	40	-31.22	-24.41	≥-61.22	Pass

Note: The BW(channel bandwidth) is declared by the manufacturer of the equipment.



I.6 Spurious Radiations

Test Result of Spurious Radiations (802.11a)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
94.71	Vertical	-68.81	-57.00	Pass
745.40	V	-63.97	-57.00	
11490.00	V	-60.57	-47.00	
17235.00	V	-58.30	-47.00	
76.79	Horizontal	-68.47	-57.00	
156.77	H	-62.05	-57.00	
11490.00	H	-60.12	-47.00	
17235.00	H	-59.27	-47.00	
Middle Channel				
129.28	Vertical	-66.74	-57.00	Pass
566.56	V	-64.06	-57.00	
11570.00	V	-62.68	-47.00	
17355.00	V	-58.58	-47.00	
144.20	Horizontal	-67.04	-57.00	
609.63	H	-65.09	-57.00	
11570.00	H	-61.99	-47.00	
17355.00	H	-58.12	-47.00	
Highest Channel				
226.56	Vertical	-69.36	-57.00	Pass
788.06	V	-64.68	-57.00	
11650.00	V	-63.17	-47.00	
17475.00	V	-60.29	-47.00	
85.91	Horizontal	-69.29	-57.00	
464.38	H	-63.23	-57.00	
11650.00	H	-60.78	-47.00	
17475.00	H	-60.39	-47.00	



Test Result of Spurious Radiations (802.11n20)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
96.43	Vertical	-68.82	-57.00	Pass
741.74	V	-63.73	-57.00	
11490.00	V	-62.70	-47.00	
17235.00	V	-59.97	-47.00	
73.80	Horizontal	-69.23	-57.00	
156.83	H	-62.71	-57.00	
11490.00	H	-62.80	-47.00	
17235.00	H	-59.99	-47.00	
Middle Channel				
129.64	Vertical	-68.77	-57.00	Pass
564.90	V	-63.61	-57.00	
11570.00	V	-60.77	-47.00	
17355.00	V	-58.76	-47.00	
148.87	Horizontal	-69.94	-57.00	
605.59	H	-64.34	-57.00	
11570.00	H	-61.00	-47.00	
17355.00	H	-60.08	-47.00	
Highest Channel				
223.90	Vertical	-69.85	-57.00	Pass
785.14	V	-63.63	-57.00	
11650.00	V	-63.70	-47.00	
17475.00	V	-58.34	-47.00	
82.24	Horizontal	-66.96	-57.00	
464.23	H	-63.11	-57.00	
11650.00	H	-62.34	-47.00	
17475.00	H	-61.45	-47.00	



Test Result of Spurious Radiations (802.11ac20)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
93.73	Vertical	-66.31	-57.00	Pass
744.08	V	-62.61	-57.00	
11490.00	V	-62.34	-47.00	
17235.00	V	-61.21	-47.00	
72.85	Horizontal	-68.94	-57.00	
156.56	H	-62.77	-57.00	
11490.00	H	-60.71	-47.00	
17235.00	H	-57.58	-47.00	
Middle Channel				
134.11	Vertical	-68.43	-57.00	Pass
566.91	V	-63.20	-57.00	
11570.00	V	-62.07	-47.00	
17355.00	V	-59.18	-47.00	
149.29	Horizontal	-68.77	-57.00	
606.79	H	-64.18	-57.00	
11570.00	H	-60.41	-47.00	
17355.00	H	-58.42	-47.00	
Highest Channel				
227.30	Vertical	-68.76	-57.00	Pass
788.96	V	-65.11	-57.00	
11650.00	V	-60.63	-47.00	
17475.00	V	-59.24	-47.00	
84.36	Horizontal	-68.95	-57.00	
467.75	H	-63.26	-57.00	
11650.00	H	-63.57	-47.00	
17475.00	H	-60.14	-47.00	



Test Result of Spurious Radiations (802.11n40)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
95.80	Vertical	-68.06	-57.00	Pass
746.14	V	-63.84	-57.00	
11510.00	V	-62.33	-47.00	
17265.00	V	-58.94	-47.00	
73.54	Horizontal	-67.00	-57.00	
155.95	H	-63.82	-57.00	
11510.00	H	-62.21	-47.00	
17265.00	H	-61.04	-47.00	
Highest Channel				
224.79	Vertical	-67.33	-57.00	Pass
785.96	V	-64.15	-57.00	
11590.00	V	-60.62	-47.00	
17385.00	V	-58.58	-47.00	
83.47	Horizontal	-68.88	-57.00	
464.86	H	-62.87	-57.00	
11590.00	H	-61.60	-47.00	
17385.00	H	-58.15	-47.00	



Test Result of Spurious Radiations (802.11ac40)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
Lowest Channel				
91.35	Vertical	-67.40	-57.00	Pass
744.03	V	-64.96	-57.00	
11510.00	V	-61.43	-47.00	
17265.00	V	-57.93	-47.00	
74.98	Horizontal	-69.41	-57.00	
158.05	H	-63.96	-57.00	
11510.00	H	-62.14	-47.00	
17265.00	H	-59.81	-47.00	
Highest Channel				
223.14	Vertical	-66.67	-57.00	Pass
788.88	V	-65.59	-57.00	
11590.00	V	-62.32	-47.00	
17385.00	V	-59.27	-47.00	
82.05	Horizontal	-68.90	-57.00	
465.33	H	-64.37	-57.00	
11590.00	H	-62.18	-47.00	
17385.00	H	-58.42	-47.00	

Test Result of Spurious Radiations (802.11ac80)				
Frequency (MHz)	Test Data		Limit (dBm)	Conclusion
	Polarization	Level (dBm)		
226.51	Vertical	-68.76	-57.00	Pass
788.48	V	-65.08	-57.00	
11550.00	V	-62.06	-47.00	
17325.00	V	-58.48	-47.00	
80.87	Horizontal	-69.75	-57.00	
465.03	H	-63.33	-57.00	
11550.00	H	-63.41	-47.00	
17325.00	H	-61.12	-47.00	