





**FCC SAR Test Report**

**Report No. : FA3D1818**

FR1 n77 Part 270	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 5	DSI 7	656000	3840	11.95	13.50	1.429	-	-	0.17	0.066	0.094
FR1 n77 Part 270	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 5	DSI 7	656000	3840	11.93	13.50	1.435	-	-	-0.16	0.061	0.088
FR1 n77 Part 270	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 5	DSI 7	656000	3840	11.95	13.50	1.429	-	-	-0.17	0.010	0.014
FR1 n77 Part 270	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 5	DSI 7	656000	3840	11.93	13.50	1.435	-	-	0.11	0.015	0.022
FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 5	DSI 7	656000	3840	14.98	16.50	1.419	50	1.000	0.02	0.429	0.609

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
<b>WLAN/BT</b>																
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 6+3(3)	Hotspot	1	2412	14.09	16.00	1.552	100	1.000	-0.03	0.194	0.301
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6+3(3)	Hotspot	1	2412	14.09	16.00	1.552	100	1.000	0.07	0.274	0.425
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 6+3(3)	Hotspot	1	2412	14.09	16.00	1.552	100	1.000	-0.01	0.032	0.050
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 6+3(3)	Hotspot	1	2412	14.09	16.00	1.552	100	1.000	-0.06	0.084	0.130
46	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 6+3(3)	Hotspot	1	2412	14.09	16.00	1.552	100	1.000	-0.03	0.387	<b>0.601</b>
	Bluetooth	1Mbps	Front	5mm	Ant 6	Hotspot	78	2480	12.62	13.50	1.225	76.94	1.083	-0.08	0.065	0.086
	Bluetooth	1Mbps	Back	5mm	Ant 6	Hotspot	78	2480	12.62	13.50	1.225	76.94	1.083	0.05	0.120	0.159
	Bluetooth	1Mbps	Left Side	5mm	Ant 6	Hotspot	78	2480	12.62	13.50	1.225	76.94	1.083	0.06	0.010	0.013
47	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Hotspot	78	2480	12.62	13.50	1.225	76.94	1.083	-0.09	0.215	<b>0.285</b>
	Bluetooth	1Mbps	Top Side	5mm	Ant 6	Hotspot	78	2480	12.62	13.50	1.225	76.94	1.083	-0.08	0.020	0.027
	Bluetooth	1Mbps	Front	5mm	Ant 3	Hotspot	0	2402	12.76	13.50	1.186	76.61	1.087	0.01	0.152	0.196
	Bluetooth	1Mbps	Back	5mm	Ant 3	Hotspot	0	2402	12.76	13.50	1.186	76.61	1.087	0.1	0.163	0.210
	Bluetooth	1Mbps	Left Side	5mm	Ant 3	Hotspot	0	2402	12.76	13.50	1.186	76.61	1.087	-0.17	0.022	0.028
	Bluetooth	1Mbps	Right Side	5mm	Ant 3	Hotspot	0	2402	12.76	13.50	1.186	76.61	1.087	0.04	0.051	0.066
	Bluetooth	1Mbps	Top Side	5mm	Ant 3	Hotspot	0	2402	12.76	13.50	1.186	76.61	1.087	-0.01	0.219	0.282
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	Hotspot	42	5210	12.36	14.00	1.459	100.00	1.000	0.06	0.365	0.532
48	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	Hotspot	42	5210	12.36	14.00	1.459	100.00	1.000	0.05	0.437	<b>0.638</b>
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Left Side	5mm	Ant 5+4(4)	Hotspot	42	5210	12.36	14.00	1.459	100.00	1.000	-0.04	0.014	0.020
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(4)	Hotspot	42	5210	12.36	14.00	1.459	100.00	1.000	-0.15	0.139	0.203
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5+4(4)	Hotspot	42	5210	12.36	14.00	1.459	100.00	1.000	0.11	0.215	0.314
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	Hotspot	155	5775	10.33	12.00	1.469	100.00	1.000	0.08	0.309	0.454
49	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	Hotspot	155	5775	10.33	12.00	1.469	100.00	1.000	0.06	0.431	<b>0.633</b>
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Side	5mm	Ant 5+4(4)	Hotspot	155	5775	10.33	12.00	1.469	100.00	1.000	-0.01	0.032	0.047
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(4)	Hotspot	155	5775	10.33	12.00	1.469	100.00	1.000	-0.11	0.155	0.228
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5+4(4)	Hotspot	155	5775	10.33	12.00	1.469	100.00	1.000	-0.06	0.247	0.363











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Report No. : FA3D1818

Table with columns for Band, Modulation, Power, Frequency, Location, Antenna, and SAR values. Row 63 is highlighted in yellow.







FCC SAR Test Report

Report No. : FA3D1818

Table with columns for test parameters (Band, Power, Modulation, etc.) and SAR results. Includes rows for LTE Band 41C HPUE and FR1 n7. Two rows are highlighted in yellow: one with SAR result 1.304 and another with 1.286.



FCC SAR Test Report

Report No. : FA3D1818

Table with columns: Model, Power, Modulation, Bandwidth, Frequency, Polarization, Distance, Antenna, etc. Includes a sub-section for 3500MHz with various LTE bands.



FCC SAR Test Report

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Table with 23 columns: Band, Modulation, Power, etc. Rows include LTE Band 48 and FR1 n77 Part 270 HPUE configurations.



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Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Headset	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
<b>WLAN/BT</b>																		
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 6+3(6)	-	Standalone	1	2412	17.98	19.50	1.419	100	1.000	-0.08	0.570	0.809	
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 6+3(6)	-	Standalone	6	2437	17.71	19.50	1.510	100	1.000	-0.08	0.603	0.911	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6+3(6)	-	Standalone	1	2412	17.98	19.50	1.419	100	1.000	-0.13	0.857	1.216	
70	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6+3(6)	-	Standalone	6	2437	17.71	19.50	1.510	100	1.000	-0.04	0.860	1.299	
	WLAN2.4GHz	802.11g 6Mbps	Back	5mm	Ant 6+3(6)	-	Standalone	6	2437	17.75	19.50	1.496	98.97	1.010	0.06	0.756	1.142	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6+3(6)	-	Standalone	11	2462	17.80	19.50	1.479	100	1.000	-0.13	0.824	1.219	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6+3(6)	Headset	Standalone	6	2437	17.71	19.50	1.510	100	1.000	0.06	0.670	1.012	
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 6+3(6)	-	Simultaneous	6	2437	12.05	14.00	1.567	100	1.000	-0.03	0.158	0.248	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6+3(6)	-	Simultaneous	6	2437	12.05	14.00	1.567	100	1.000	0.01	0.239	0.374	
	WLAN2.4GHz	802.11b 1Mbps	Front	16mm	Ant 6+3(3)	-	Full power	6	2437	18.69	20.50	1.517	100	1.000	0.02	0.268	0.407	
	WLAN2.4GHz	802.11b 1Mbps	Back	20mm	Ant 6+3(3)	-	Full power	6	2437	18.69	20.50	1.517	100	1.000	0.06	0.428	0.649	
	Bluetooth	1Mbps	Front	5mm	Ant 6	-	Standalone	78	2480	17.61	18.00	1.094	76.94	1.083	0.06	0.131	0.155	
71	Bluetooth	1Mbps	Back	5mm	Ant 6	-	Standalone	78	2480	17.61	18.00	1.094	76.94	1.083	0.01	0.243	0.288	
	Bluetooth	1Mbps	Front	5mm	Ant 3	-	Standalone	0	2402	17.77	18.00	1.054	76.61	1.087	0.02	0.224	0.257	
	Bluetooth	1Mbps	Back	5mm	Ant 3	-	Standalone	0	2402	17.77	18.00	1.054	76.61	1.087	-0.06	0.240	0.275	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(5)	-	Standalone	58	5290	14.06	16.00	1.563	100.00	1.000	0.08	0.540	0.844	
72	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(5)	-	Standalone	58	5290	14.06	16.00	1.563	100.00	1.000	-0.06	0.761	1.190	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(5)	-	Simultaneous	58	5290	9.08	11.00	1.556	100.00	1.000	0.05	0.177	0.275	
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(5)	-	Simultaneous	58	5290	9.08	11.00	1.556	100.00	1.000	-0.11	0.250	0.389	
	WLAN5.3GHz	802.11a 6Mbps	Front	16mm	Ant 5+4(4)	-	Full power	60	5300	18.75	20.50	1.496	98.91	1.011	0.06	0.233	0.352	
	WLAN5.3GHz	802.11a 6Mbps	Back	20mm	Ant 5+4(4)	-	Full power	60	5300	18.75	20.50	1.496	98.91	1.011	0.02	0.385	0.582	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	106	5530	13.28	15.00	1.486	100.00	1.000	-0.12	0.475	0.706	
73	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	-	Standalone	106	5530	13.28	15.00	1.486	100.00	1.000	-0.06	0.792	1.177	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	-	Standalone	122	5610	13.16	15.00	1.528	100.00	1.000	0.11	0.676	1.033	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(5)	-	Simultaneous	106	5530	6.33	8.00	1.469	100.00	1.000	-0.03	0.158	0.232	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(5)	-	Simultaneous	106	5530	6.33	8.00	1.469	100.00	1.000	-0.15	0.263	0.386	
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	16mm	Ant 5+4(4)	-	Full power	142	5710	20.21	22.00	1.510	100.00	1.000	0.02	0.218	0.329	
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	20mm	Ant 5+4(4)	-	Full power	142	5710	20.21	22.00	1.510	100.00	1.000	0.03	0.369	0.557	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	155	5775	13.13	14.50	1.371	100.00	1.000	0.02	0.581	0.796	
74	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	-	Standalone	155	5775	13.13	14.50	1.371	100.00	1.000	0.06	0.811	1.112	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Simultaneous	155	5775	8.19	9.50	1.352	100.00	1.000	0.02	0.189	0.256	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	-	Simultaneous	155	5775	8.19	9.50	1.352	100.00	1.000	0.16	0.264	0.357	
	WLAN5.8GHz	802.11a 6Mbps	Front	16mm	Ant 5+4(5)	-	Full power	149	5745	18.74	20.50	1.500	98.91	1.011	0.02	0.209	0.317	
	WLAN5.8GHz	802.11a 6Mbps	Back	20mm	Ant 5+4(5)	-	Full power	149	5745	18.74	20.50	1.500	98.91	1.011	0.01	0.399	0.605	



16.4 Product specific 10g SAR

Table with columns: Plot No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Gap (mm), Antenna, Power State, Ch., Freq. (MHz), Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 10g SAR (W/kg), Reported 10g SAR (W/kg). Rows include GSM850, WCDMA V, 835MHz, 1750MHz, and LTE Band 66.





FCC SAR Test Report

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Table with columns: Model (e.g., GSM1900, WCDMA II, LTE Band 2), Modulation (e.g., GPRS, RMC, QPSK), Power (e.g., 1, 50, 100), Bandwidth, Frequency, Modulator, Antenna Type, Dimensions, SAR values (0.03 to 3.175), etc.



FCC SAR Test Report

Report No. : FA3D1818

Table with columns: LTE Band, Modulation, Power, etc. Includes rows for LTE Band 2 (20M) and 2600MHz (20M) with various antenna configurations and SAR values.















	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 5+4(4)	Standalone	56	5280	18.67	20.50	1.524	98.91	1.011	0.02	1.210	1.864
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 5+4(4)	Standalone	60	5300	18.75	20.50	1.496	98.91	1.011	-0.15	1.160	1.755
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 5+4(4)	Standalone	60	5300	18.75	20.50	1.496	98.91	1.011	-0.06	1.330	2.012
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 5+4(4)	Standalone	56	5280	18.67	20.50	1.524	98.91	1.011	0.01	1.180	1.818
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Simultaneous	58	5290	14.58	16.50	1.556	100.00	1.000	-0.09	0.528	0.822
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+4(5)	Simultaneous	58	5290	14.58	16.50	1.556	100.00	1.000	0.14	0.421	0.655
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 5+4(5)	Simultaneous	58	5290	14.58	16.50	1.556	100.00	1.000	-0.09	0.359	0.559
	WLAN5.3GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5+4(5)	Simultaneous	58	5290	14.58	16.50	1.556	100.00	1.000	0.07	0.411	0.640
	WLAN5.3GHz	802.11a 6Mbps	Front	10mm	Ant 5+4(4)	Full power	60	5300	18.75	20.50	1.496	98.91	1.011	-0.08	0.866	1.310
	WLAN5.3GHz	802.11a 6Mbps	Back	8mm	Ant 5+4(4)	Full power	60	5300	18.75	20.50	1.496	98.91	1.011	-0.08	0.495	0.749
	WLAN5.3GHz	802.11a 6Mbps	Right Side	12mm	Ant 5+4(4)	Full power	60	5300	18.75	20.50	1.496	98.91	1.011	0.1	0.157	0.237
	WLAN5.3GHz	802.11a 6Mbps	Top Side	10mm	Ant 5+4(4)	Full power	60	5300	18.75	20.50	1.496	98.91	1.011	-0.18	0.351	0.531
94	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Standalone	138	5690	16.92	18.50	1.439	100.00	1.000	0.03	2.190	3.151
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 5+4(4)	Standalone	142	5710	18.87	20.50	1.455	100.00	1.000	0.02	1.980	2.882
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Standalone	106	5530	16.12	18.00	1.542	100.00	1.000	0.12	1.830	2.821
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Standalone	122	5610	16.70	18.50	1.514	100.00	1.000	-0.16	1.780	2.694
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+4(5)	Standalone	138	5690	16.92	18.50	1.439	100.00	1.000	-0.12	0.798	1.148
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 5+4(5)	Standalone	138	5690	16.92	18.50	1.439	100.00	1.000	-0.02	0.636	0.915
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5+4(5)	Standalone	138	5690	16.92	18.50	1.439	100.00	1.000	-0.05	0.995	1.432
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(4)	Simultaneous	106	5530	14.11	15.50	1.377	100.00	1.000	-0.09	0.602	0.829
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+4(4)	Simultaneous	106	5530	14.11	15.50	1.377	100.00	1.000	-0.16	0.239	0.329
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 5+4(4)	Simultaneous	106	5530	14.11	15.50	1.377	100.00	1.000	-0.07	0.191	0.263
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5+4(4)	Simultaneous	106	5530	14.11	15.50	1.377	100.00	1.000	0.11	0.298	0.410
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	10mm	Ant 5+4(4)	Full power	142	5710	20.21	22.00	1.510	100.00	1.000	0.1	0.823	1.243
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	8mm	Ant 5+4(4)	Full power	142	5710	20.21	22.00	1.510	100.00	1.000	0.12	0.479	0.723
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Side	12mm	Ant 5+4(4)	Full power	142	5710	20.21	22.00	1.510	100.00	1.000	0.08	0.143	0.216
	WLAN5.5GHz	802.11n-HT40 MCS0	Top Side	10mm	Ant 5+4(4)	Full power	142	5710	20.21	22.00	1.510	100.00	1.000	-0.17	0.386	0.583
95	WLAN5.8GHz	802.11n-HT40 MCS0	Front	0mm	Ant 5+4(4)	Standalone	159	5795	18.48	20.00	1.419	100.00	1.000	0.04	2.210	3.136
	WLAN5.8GHz	802.11n-HT40 MCS0	Front	0mm	Ant 5+4(4)	Standalone	151	5755	18.36	20.00	1.459	100.00	1.000	0.06	2.010	2.932
	WLAN5.8GHz	802.11a 6Mbps	Front	0mm	Ant 5+4(4)	Standalone	149	5745	18.18	20.00	1.521	98.91	1.011	0.01	1.850	2.844
	WLAN5.8GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+4(4)	Standalone	159	5795	18.48	20.00	1.419	100.00	1.000	-0.15	1.060	1.504
	WLAN5.8GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 5+4(4)	Standalone	159	5795	18.48	20.00	1.419	100.00	1.000	-0.02	1.130	1.604
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(4)	Simultaneous	155	5775	13.25	15.00	1.496	100.00	1.000	0.01	0.575	0.860
	WLAN5.8GHz	802.11a 6Mbps	Front	10mm	Ant 5+4(5)	Full power	149	5745	18.74	20.50	1.500	98.91	1.011	-0.03	0.809	1.227
	WLAN5.8GHz	802.11a 6Mbps	Back	8mm	Ant 5+4(5)	Full power	149	5745	18.74	20.50	1.500	98.91	1.011	0.14	0.456	0.691
	WLAN5.8GHz	802.11a 6Mbps	Top Side	10mm	Ant 5+4(5)	Full power	149	5745	18.74	20.50	1.500	98.91	1.011	0.11	0.336	0.509



16.5 Repeated SAR Measurement

<1g>

Table with 22 columns: Plot No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Gap (mm), Antenna, Power State, Ch., Freq. (MHz), Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 1g SAR (W/kg), Ratio, Reported 1g SAR (W/kg). Rows include WCDMA IV, FR1 n2, FR1 n41, FR1 n77 Part 270, WCDMA V, and WLAN2.4GHz/WLAN5.8GHz.

<10g>

Table with 22 columns: Plot No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Gap (mm), Antenna, Power State, Ch., Freq. (MHz), Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 10g SAR (W/kg), Ratio, Reported 10g SAR (W/kg). Rows include WCDMA IV, LTE Band 2, FR1 n41, LTE Band 48, FR1 n77 Part 270, and WLAN5.2GHz/WLAN5.3GHz/WLAN5.5GHz/WLAN5.8GHz.

General Note:

- 1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated measured SAR.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

**16.6 TDD 5G NR&LTE Linearity Data Analysis**

**General Note:**

This device support Power Class 2 and Power Class 3 operations for LTE Band 41 and TDD n77. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg for 1g and < 3.5 W/kg for 10g, Separate SAR testing for Power Class 2 is not required.

LTE B41-Linearity Data for Head Ant 2			LTE B41-Linearity Data for Head Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.50	26.50	Maximum Tune up Power (dBm)	15.80	17.40
Reported 1g SAR (W/kg)	0.116	0.152	Reported 1g SAR (W/kg)	0.897	0.822
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	141.71	193.41	Frame Averaged (mW)	24.07	23.80
Linearity SAR (W/kg)	0.158		Linearity SAR (W/kg)	0.887	
% deviation from expected linearity		-3.99%	% deviation from expected linearity		-7.32%
LTE B41-Linearity Data for Body-worn Ant 2			LTE B41-Linearity Data for Body-worn Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.50	25.10	Maximum Tune up Power (dBm)	18.40	20.00
Reported 1g SAR (W/kg)	1.281	1.239	Reported 1g SAR (W/kg)	0.895	0.862
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	141.71	140.12	Frame Averaged (mW)	43.79	43.30
Linearity SAR (W/kg)	1.267		Linearity SAR (W/kg)	0.885	
% deviation from expected linearity		-2.18%	% deviation from expected linearity		-2.59%
LTE B41-Linearity Data for Hotspot Ant 2			LTE B41-Linearity Data for Hotspot Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	22.50	24.10	Maximum Tune up Power (dBm)	13.90	15.50
Reported 1g SAR (W/kg)	1.287	1.260	Reported 1g SAR (W/kg)	0.634	0.618
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	112.57	111.30	Frame Averaged (mW)	15.54	15.36
Linearity SAR (W/kg)	1.273		Linearity SAR (W/kg)	0.627	
% deviation from expected linearity		-0.98%	% deviation from expected linearity		-1.41%
LTE B41-Linearity Data for Extremity Ant 2			LTE B41-Linearity Data for Extremity Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.50	25.50	Maximum Tune up Power (dBm)	20.50	22.10
Reported 10g SAR (W/kg)	2.922	3.047	Reported 10g SAR (W/kg)	2.475	2.388
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	141.71	153.63	Frame Averaged (mW)	71.02	70.22
Linearity SAR (W/kg)	3.168		Linearity SAR (W/kg)	2.447	
% deviation from expected linearity		-3.81%	% deviation from expected linearity		-2.42%
FR1 n77 Part 270 (HPUE)-Linearity Data for Head Ant 7			FR1 n77 Part 270 (HPUE)-Linearity Data for Head Ant 4		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	17.70	20.70	Maximum Tune up Power (dBm)	19.00	22.00
Reported 1g SAR (W/kg)	0.881	0.837	Reported 1g SAR (W/kg)	0.845	0.798
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	58.88	58.74	Frame Averaged (mW)	79.43	79.24
Linearity SAR (W/kg)	0.879		Linearity SAR (W/kg)	0.843	
% deviation from expected linearity		-4.77%	% deviation from expected linearity		-5.34%
FR1 n77 Part 270 (HPUE)-Linearity Data for Body-worn Ant 7			FR1 n77 Part 270 (HPUE)-Linearity Data for Body-worn Ant 4		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	19.50	22.50	Maximum Tune up Power (dBm)	19.00	22.00
Reported 1g SAR (W/kg)	0.875	0.854	Reported 1g SAR (W/kg)	0.882	0.830
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%





Frame Averaged (mW)	89.13	88.91	Frame Averaged (mW)	79.43	79.24
Linearity SAR (W/kg)	0.873		Linearity SAR (W/kg)	0.880	
% deviation from expected linearity		-2.17%	% deviation from expected linearity		-5.67%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Hotspot Ant 7</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Hotspot Ant 4</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	15.40	18.40	Maximum Tune up Power (dBm)	17.50	20.50
Reported 1g SAR (W/kg)	0.629	0.583	Reported 1g SAR (W/kg)	0.615	0.600
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	34.67	34.59	Frame Averaged (mW)	56.23	56.10
Linearity SAR (W/kg)	0.628		Linearity SAR (W/kg)	0.614	
% deviation from expected linearity		-7.09%	% deviation from expected linearity		-2.21%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Extremity Ant 7</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Extremity Ant 4</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	19.50	22.50	Maximum Tune up Power (dBm)	24.00	27.00
Reported 10g SAR (W/kg)	2.428	2.461	Reported 10g SAR (W/kg)	2.081	1.999
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	89.13	88.91	Frame Averaged (mW)	251.19	250.59
Linearity SAR (W/kg)	2.422		Linearity SAR (W/kg)	2.076	
% deviation from expected linearity		1.60%	% deviation from expected linearity		-3.71%

<b>LTE B41-Linearity Data for Head Ant 10</b>			<b>LTE B41-Linearity Data for Head Ant 0</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.30	24.90	Maximum Tune up Power (dBm)	23.00	26.00
Reported 1g SAR (W/kg)	0.891	0.887	Reported 1g SAR (W/kg)	0.141	0.185
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	135.33	133.81	Frame Averaged (mW)	126.30	172.38
Linearity SAR (W/kg)	0.881		Linearity SAR (W/kg)	0.192	
% deviation from expected linearity		0.68%	% deviation from expected linearity		-3.87%
<b>LTE B41-Linearity Data for Body-worn Ant 10</b>			<b>LTE B41-Linearity Data for Body-worn Ant 0</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	22.00	23.60	Maximum Tune up Power (dBm)	22.80	24.40
Reported 1g SAR (W/kg)	0.787	0.785	Reported 1g SAR (W/kg)	1.304	1.250
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	100.32	99.19	Frame Averaged (mW)	120.62	119.26
Linearity SAR (W/kg)	0.778		Linearity SAR (W/kg)	1.289	
% deviation from expected linearity		0.88%	% deviation from expected linearity		-3.05%
<b>LTE B41-Linearity Data for Hotspot Ant 10</b>			<b>LTE B41-Linearity Data for Hotspot Ant 0</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	19.20	20.80	Maximum Tune up Power (dBm)	19.90	21.50
Reported 1g SAR (W/kg)	0.625	0.616	Reported 1g SAR (W/kg)	1.302	1.282
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	52.65	52.06	Frame Averaged (mW)	61.86	61.16
Linearity SAR (W/kg)	0.618		Linearity SAR (W/kg)	1.287	
% deviation from expected linearity		-0.32%	% deviation from expected linearity		-0.42%
<b>LTE B41-Linearity Data for Extremity Ant 10</b>			<b>LTE B41-Linearity Data for Extremity Ant 0</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	22.00	23.60	Maximum Tune up Power (dBm)	22.50	24.10
Reported 10g SAR (W/kg)	2.483	2.293	Reported 10g SAR (W/kg)	3.155	3.143
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	100.32	99.19	Frame Averaged (mW)	112.57	111.30
Linearity SAR (W/kg)	2.455		Linearity SAR (W/kg)	3.119	
% deviation from expected linearity		-6.60%	% deviation from expected linearity		0.75%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Head Ant 8</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Head Ant 5</b>		
	FR1 n77	FR1 n77		FR1 n77	FR1 n77



	(Power Class 3)	(Power Class 2)		(Power Class 3)	(Power Class 2)
Maximum Tune up Power (dBm)	24.00	27.00	Maximum Tune up Power (dBm)	15.60	18.60
Reported 1g SAR (W/kg)	0.264	0.253	Reported 1g SAR (W/kg)	0.854	0.886
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	251.19	250.59	Frame Averaged (mW)	36.31	36.22
Linearity SAR (W/kg)	0.263		Linearity SAR (W/kg)	0.852	
% deviation from expected linearity		-3.94%	% deviation from expected linearity		3.99%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Body-worn Ant 8</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Body-worn Ant 5</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	23.30	26.30	Maximum Tune up Power (dBm)	17.80	20.80
Reported 1g SAR (W/kg)	0.544	0.510	Reported 1g SAR (W/kg)	0.877	0.819
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	213.80	213.29	Frame Averaged (mW)	60.26	60.11
Linearity SAR (W/kg)	0.543		Linearity SAR (W/kg)	0.875	
% deviation from expected linearity		-6.03%	% deviation from expected linearity		-6.39%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Hotspot Ant 8</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Hotspot Ant 5</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	21.30	24.30	Maximum Tune up Power (dBm)	13.50	16.50
Reported 1g SAR (W/kg)	1.274	1.236	Reported 1g SAR (W/kg)	0.629	0.609
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	134.90	134.58	Frame Averaged (mW)	22.39	22.33
Linearity SAR (W/kg)	1.271		Linearity SAR (W/kg)	0.628	
% deviation from expected linearity		-2.75%	% deviation from expected linearity		-2.95%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Extremity Ant 8</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Extremity Ant 5</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	23.30	26.30	Maximum Tune up Power (dBm)	19.40	22.40
Reported 10g SAR (W/kg)	3.186	3.072	Reported 10g SAR (W/kg)	2.471	2.462
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	213.80	213.29	Frame Averaged (mW)	87.10	86.89
Linearity SAR (W/kg)	3.178		Linearity SAR (W/kg)	2.465	
% deviation from expected linearity		-3.35%	% deviation from expected linearity		-0.13%

**Sensor off**

<b>LTE B41-Linearity Data for Body-worn Ant 2</b>			<b>LTE B41-Linearity Data for Body-worn Ant 1</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.50	26.50	Maximum Tune up Power (dBm)	23.00	26.00
Reported 1g SAR (W/kg)	0.266	0.376	Reported 1g SAR (W/kg)	0.456	0.591
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	141.71	193.41	Frame Averaged (mW)	126.30	172.38
Linearity SAR (W/kg)	0.363		Linearity SAR (W/kg)	0.622	
% deviation from expected linearity		3.57%	% deviation from expected linearity		-5.04%
<b>LTE B41-Linearity Data for Extremity Ant 2</b>			<b>LTE B41-Linearity Data for Extremity Ant 1</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.50	26.50	Maximum Tune up Power (dBm)	23.00	26.00
Reported 10g SAR (W/kg)	0.208	0.287	Reported 10g SAR (W/kg)	0.982	1.267
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	141.71	193.41	Frame Averaged (mW)	126.30	172.38
Linearity SAR (W/kg)	0.284		Linearity SAR (W/kg)	1.340	
% deviation from expected linearity		1.10%	% deviation from expected linearity		-5.47%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Body-worn Ant 5</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Body-worn Ant 7</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	24.00	27.00	Maximum Tune up Power (dBm)	24.00	27.00
Reported 1g SAR (W/kg)	0.447	0.428	Reported 1g SAR (W/kg)	0.169	0.161
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%



Frame Averaged (mW)	251.19	250.59	Frame Averaged (mW)	251.19	250.59
Linearity SAR (W/kg)	0.446		Linearity SAR (W/kg)	0.169	
% deviation from expected linearity		-4.02%	% deviation from expected linearity		-4.51%
<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Extremity Ant 5</b>			<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Extremity Ant 7</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)		FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	24.00	27.00	Maximum Tune up Power (dBm)	24.00	27.00
Reported 10g SAR (W/kg)	0.439	0.417	Reported 10g SAR (W/kg)	1.318	1.349
Duty Cycle	100.00%	50.00%	Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	251.19	250.59	Frame Averaged (mW)	251.19	250.59
Linearity SAR (W/kg)	0.438		Linearity SAR (W/kg)	1.315	
% deviation from expected linearity		-4.79%	% deviation from expected linearity		2.60%

<b>LTE B41-Linearity Data for Body-worn Ant 0</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.00	26.00
Reported 1g SAR (W/kg)	0.124	0.174
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	126.30	172.38
Linearity SAR (W/kg)	0.169	
% deviation from expected linearity		2.81%

<b>LTE B41-Linearity Data for Extremity Ant 0</b>		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.00	26.00
Reported 10g SAR (W/kg)	0.148	0.201
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	126.30	172.38
Linearity SAR (W/kg)	0.202	
% deviation from expected linearity		-0.49%

<b>FR1 n77 Part 270 (HPUE)-Linearity Data for Body-worn Ant 4</b>		
	FR1 n77 (Power Class 3)	FR1 n77 (Power Class 2)
Maximum Tune up Power (dBm)	24.00	27.00
Reported 1g SAR (W/kg)	0.516	0.503
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	251.19	250.59
Linearity SAR (W/kg)	0.515	
% deviation from expected linearity		-2.29%

### 17. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN5GHz	Yes	Yes	Yes	Yes
3.	WWAN + WLAN6GHz	Yes	Yes	Yes	Yes
4.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
5.	WLAN5GHz+ Bluetooth	Yes	Yes	Yes	Yes
6.	WLAN6GHz+ Bluetooth	Yes	Yes	Yes	Yes
7.	WWAN + WLAN5GHz+ Bluetooth	Yes	Yes	Yes	Yes
8.	WWAN + WLAN6GHz+ Bluetooth	Yes	Yes	Yes	Yes
9.	WWAN + WLAN2.4GHz+ NFC				Yes
10.	WWAN + WLAN5GHz+ NFC				Yes
11.	WWAN + WLAN6GHz+ NFC				Yes
12.	WWAN + Bluetooth+ NFC				Yes
13.	WLAN5GHz+ Bluetooth+ NFC				Yes
14.	WLAN6GHz+ Bluetooth+ NFC				Yes
15.	WWAN + WLAN5GHz+ Bluetooth+ NFC				Yes
16.	WWAN + WLAN6GHz+ Bluetooth+ NFC				Yes

**General Note:**

- This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5GNR (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- WWAN above includes 5G NR bands and EN-DC combination.
- EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- For EN-DC mode, Qualcomm Smart Transmit algorithm in WWAN adds directly the time-averaged RF exposure from 4G(LTE) and time-averaged RF exposure from 5G NR. Smart Transmit algorithm controls the total RF exposure from both 4G and 5G NR to not exceed FCC limit. Therefore, simultaneous transmission compliance between 4G+5G NR operation is demonstrated in the Part 2 Report during algorithm validation. In Part 1 Report, simultaneous transmission compliance was evaluated individually with other Radios (WLAN or BT) using one of 4G or 5G NR.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only). WLAN6GHz has no hotspot function.
- The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
- According to the EUT characteristic, WLAN 5GHz/6GHz and Bluetooth can transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz/6GHz and WLAN 2.4GHz can't transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz and WLAN 6GHz can't transmit simultaneously.
- According to the EUT characteristic, WLAN 2.4GHz and Bluetooth cannot transmit simultaneously.
- NFC can transmit simultaneously with other Radios in extremity exposure condition.
- For Headset SAR and non-Headset SAR always chose higher SAR to do co-located analysis.
- For distance SAR and non-distance SAR always chose higher SAR to do co-located analysis.
- For standalone WWAN, always choose the highest SAR among all WWAN bands within the selected antenna for head each exposure position to perform simultaneous transmission analysis with WLAN/BT. This is the worst co-located analysis and can represent each band.
- The maximum SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
  - 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
  - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$ , and the peak separation distance is determined from the square root of  $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ , where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
  - If  $SPLSR \leq 0.04$  for 1g SAR and  $SPLSR \leq 0.10$  for 10g SAR, simultaneously transmission SAR measurement is not necessary.
  - Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

- v) The SPLSR calculated results please refer to section 17.6.
18. The WLAN6GHz Sim-Tx analysis guidance with other transmitters was based on SAR test results. The simultaneous transmission and test exemption analysis were compliant with KDB 447498 D01. For the device does not support FR2 or other MPE field measurement, therefore section 17 in the SAR report has no TER analysis according to KDB 987594 requirement.
19. The simultaneous transmission analysis, considering WPT highest SAR is less than 0.0001 W/kg, the contribution of the reverse charging to the total TER can be neglected.

### 17.1 5G NR + LTE + WLAN + BT Sim-Tx analysis

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

$$x\% * A + (100-x)\% * B \leq 1.0,$$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and  $A \leq 1.0$ ; B is normalized reported time-averaged exposure ratio from 5G NR (i.e. SAR exposure for 5G FR1), and  $B \leq 1.0$ .

Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

$$x\% * A + (100-x)\% * B + C \leq 1.0 \quad (1)$$

$$x\% * A + (100-x)\% * B \leq x\% * \max(A, B) + (100-x)\% * \max(A, B) \leq \max(A, B)$$

$$x\% * A + (100-x)\% * B + C \leq \max(A, B) + C \leq 1.0 \quad (2)$$

If  $A + C \leq 1.0$  and  $B + C \leq 1.0$  can be proven, then " $x\% * A + (100-x)\% * B + C \leq 1.0$ ". Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1

Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1

Else, if  $A + C > 1.0$  and/or  $B + C > 1.0$ , then the followings need to hold true for compliance:

i. A and C are decoupled based on the SPLSR criteria, and

ii.  $(100-x)\% * B + C \leq 1.0$ , and

iii.  $x\% * A + (100-x)\% * B \leq 1.0$

Note iii. is covered in Part 2 report; i. and ii. should be addressed in Part 2 report.

Above analysis is also apply to LTE inter-band uplink, LTE1 + LTE2 + WLAN + BT simultaneous transmission, so inter-band uplink CA no need to do additional simultaneously analysis again. Only required comply with total exposure ratio (TER) of LTE + WLAN + BT < 1.

**17.2 Sub6 Antenna Groups**

The 2nd generation of Smart Transmit (GEN2) operates based on pre-defined sub6 antenna groups (AG). Sub6 Tx antennas in the device are grouped based on spatial variation of RF exposure distributions, where the RF exposure of one AG is mutually exclusive from other AG. This is accomplished by demonstrating below conditions for all exposure positions under each DSI for a given exposure category.

- (a) Case 1: Sum of SAR of one antenna from each of the sub6 AGs and the RF exposure from radios outside Smart Transmit is less than regulatory limits for each supported DSI. This condition must be demonstrated for all antenna combinations of sub6 AGs.
  - i. For a given DSI, obtain the highest *reported* SAR for each antenna out of all supported technologies and frequency bands. Obtain the maximum *reported* SAR for each AG by taking the maximum out of *reported* SAR for all antennas belonging to each AG.
  - ii. Demonstrate that the sum of maximum reported SAR (normalized to regulatory limit) from each of the sub6 AGs and the sum of reported SAR (normalized to regulatory limit) from all supported radios outside of Smart Transmit should be less than 1.0
- (b) Case 2: If the Case 1 is NOT met, then for a given antenna grouping scheme plus external radios/antennas (ERs) (referred to as 'configuration'), demonstrate all AG pairs, all ER pairs and all (AG, ER) pairs in the configuration meet SPLSR criteria (Section 4.3.2 (c) in FCC KDB 447498 D01 v06) for each exposure position under each supported DSI. For a given exposure position under a given DSI, prove all AG pairs, all ER pairs and all (AG, ER) pairs (if there are external radios outside Smart Transmit) in the configuration meet SPLSR.

This device supports two sub6 AG: AG0 and AG1, the detailed please refer to the below table:

<b>Antenna Group 0 (AG0)</b>	ANT1 & ANT4 & ANT5 & ANT7 & ANT10
<b>Antenna Group 1 (AG1)</b>	ANT0 & ANT2 & ANT8

The conditions are verified through the following criterias:

- i) (SAR1 + SAR2 criteria): If SPLSR criteria is not used, then the highest reported SAR at *Plimit* for each antenna should be obtained out of all supported technologies and frequency bands for each DSI. Demonstrate that the sum of reported SAR of one antenna from each of the sub6 AGs and the sum of RF exposure from all supported radios outside of Smart Transmit should be less than the regulatory limit as given below for each DSI.
  - 1. Obtain the worst-case reported SAR for each antenna group (i.e., maximum *reported* SAR at *Plimit* out of all supported technologies, frequency bands and antennas in AG0 and AG1), denoted as max.SAR.AG0 and max.SAR.AG1, and obtain the worst-case RF exposure for each external radio, and demonstrate that the sum of these RF exposures meets: { [max.SAR.AG0+ max.SAR.AG1] + WIFI/BT worst-case reported SAR} ≤ 1.6 (for 1g, or 4.0 for 10g). (WIFI/BT worst-case reported SAR is the worst SAR in all combinations of WIFI and BT simultaneous transmission)
- ii) (SPLSR criteria): For each antenna, obtain the highest reported SAR value at *Plimit* out of all supported technologies for each frequency band. Using these values, demonstrate for a given DSI that every antenna from one sub6 AG meets SPLSR criteria with every antenna in another sub6 AG for all frequency bands. This criteria must be demonstrated for all antenna pair combinations irrespective of supported simultaneous transmission scenarios as given below for each DSI:
  - a. SPLSR criteria should be met for all antenna pair combinations of AG0 and AG1. As it can be seen, these include all combinations of antenna groups, antennas, and frequency bands.
  - b. Obtain combined SAR per AG: Obtain the worst-case conservative combined SAR and its peak location for each AG.
  - c. Use the 'closest' peak location out of all antennas of AGj to evaluate SPLSR with other AGs in the configuration. Note, by 'closest', select the peak location out of all antennas (ε AGj) that is closest to the peak location of other AG where SPLSR is evaluated.
- iii) (combination of SPLSR & SAR1+SAR2 criteria): If SPLSR criteria for all the combinations of sub6 antenna groups in (i) is demonstrated to show that each AG is mutually exclusive from other AGs, and if the WIFI/BT antennas supported outside of Smart Transmit do not meet SPLSR criteria, then the condition in (ii) reduces to: {max.SAR.AG0 + worst-case reported SAR} ≤ 1.6 and {max.SAR.AG1+ worst-case reported SAR } ≤ 1.6 for compliance demonstration (for 1g, or 4.0 for 10g).

For summed SAR results and SPLSR detailed analysis, please refer to section 17.3 / 17.4 / 17.5 / 17.6 /17.7 of this report. All of the combinations of sub6 antenna groups are sufficient to show that AG0 is mutually exclusive from AG1 and that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.

### 17.3 Head Exposure Conditions

**General Note:** The unit of SAR evaluation is W/kg.

**Simultaneous Transmission Evaluation of WWAN+WLAN+BT:**

**<AG0 maximum report SAR>:**

Test Position	Ant1	Ant4	Ant5	Ant7	Ant10	MAX
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Right Cheek	0.889	0.489	0.326	0.888	0.495	0.889
Right Tilted	0.897	0.534	0.323	0.290	0.166	<b>0.897</b>
Left Cheek	0.569	0.843	0.886	0.402	0.891	0.891
Left Tilted	0.626	0.845	0.644	0.115	0.086	0.845

**<AG1 maximum report SAR>:**

Test Position	Ant0	Ant2	Ant8	MAX
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Right Cheek	0.163	0.178	0.264	0.264
Right Tilted	0.161	0.111	0.106	0.161
Left Cheek	0.296	0.157	0.205	0.296
Left Tilted	0.138	0.099	0.156	0.156

**<WLAN+BT Worse-case SAR>:**

NO	1	2	3	4	5	2+3	2+4	3+5	4+5	Wlan+BT worse case
Test Position	WLAN2.4GHz Ant 3+6	WLAN5GHz Ant 4+5	Bluetooth Ant 3	Bluetooth Ant 6	WLAN6GHz Ant 4+5					
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
Right Cheek	0.236	0.185	0.166	0.057	0.154	0.351	0.242	0.320	0.211	0.351
Right Tilted	0.256	0.194	0.197	0.016	0.174	0.391	0.210	0.371	0.190	0.391
Left Cheek	0.378	0.364	0.280	0.095	0.389	0.644	0.459	0.669	0.484	0.669
Left Tilted	0.330	0.286	0.244	0.029	0.337	0.530	0.315	0.581	0.366	0.581

**<Simultaneous Transmission analysis of AG0 + AG1 + WLAN+BT Worse-case>:**

Test Position	AG0	AG1	Wlan/BT worst case	AG0+AG1+wlan +BT worse case
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
Right Cheek	0.889	0.264	0.351	1.50
Right Tilted	0.897	0.161	0.391	1.45
Left Cheek	0.891	0.296	0.669	<b>1.86</b>
Left Tilted	0.845	0.156	0.581	1.58

Note: The results marked yellow in above table refers to the detailed analysis corresponding to each position below tables.



Left Cheek					
Ant combination	AG1	AG0	Wlan+BT worst case	AG0+AG1+wlan +BT worst case	Note
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
Ant0-Ant1	0.296	0.569	0.669	1.53	-
Ant0-Ant4	0.296	0.843	0.669	1.81	Case 1
Ant0-Ant5	0.296	0.886	0.669	1.85	Case 2
Ant0-Ant7	0.296	0.402	0.669	1.37	-
Ant0-Ant10	0.296	0.891	0.669	1.86	Case 3
Ant2-Ant1	0.157	0.569	0.669	1.40	-
Ant2-Ant4	0.157	0.843	0.669	1.67	Case 4
Ant2-Ant5	0.157	0.886	0.669	1.71	Case 5
Ant2-Ant7	0.157	0.402	0.669	1.23	-
Ant2-Ant10	0.157	0.891	0.669	1.72	Case 6
Ant8-Ant1	0.205	0.569	0.669	1.44	-
Ant8-Ant4	0.205	0.843	0.669	1.72	Case 7
Ant8-Ant5	0.205	0.886	0.669	1.76	Case 8
Ant8-Ant7	0.205	0.402	0.669	1.28	-
Ant8-Ant10	0.205	0.891	0.669	1.77	Case 9

<Simultaneous Transmission analysis of WLAN/BT only without WWAN>:

NO	1	2	3	4	1+2	1+3	2+4	3+4
Test Position	WLAN5GHz Ant 4+5	Bluetooth Ant 3	Bluetooth Ant 6	WLAN6GHz Ant 4+5				
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
Right Cheek	0.622	0.289	0.097	0.154	0.91	0.72	0.44	0.25
Right Tilted	0.589	0.343	0.027	0.174	0.93	0.62	0.52	0.20
Left Cheek	1.106	0.487	0.160	0.389	1.59	1.27	0.88	0.55
Left Tilted	0.919	0.424	0.050	0.337	1.34	0.97	0.76	0.39



### 17.4 Hotspot Exposure Conditions

**General Note:** The unit of SAR evaluation is W/kg.  
**Simultaneous Transmission Evaluation of WWAN+WLAN+BT:**  
**<AG0 maximum report SAR>:**

Test Position	Ant1	Ant4	Ant5	Ant7	Ant10	MAX
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Front	0.447	0.134	0.093	0.327	0.262	0.447
Back	0.631	0.615	0.526	0.485	0.351	0.631
Left Side	0.621	0.008	0.007	0.632	0.625	0.632
Right Side	0.122	0.125	0.629	0.012	0.015	0.629
Top Side	0.634	0.263	0.094	0.065	0.035	0.634
Bottom Side						

**<AG1 maximum report SAR>:**

Test Position	Ant0	Ant2	Ant8	MAX
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Front	0.910	1.253	0.521	1.253
Back	1.267	0.973	0.618	1.267
Left Side	0.870	0.441	0.098	0.870
Right Side	0.150	0.774	1.274	1.274
Top Side				
Bottom Side	1.302	1.293	0.480	1.302

**<WLAN+BT Worse-case SAR>:**

NO	1	2	3	4	2+3	2+4	Wlan+BT worse case
	WLAN2.4GHz Ant 3+6	WLAN5GHz Ant 4+5	Bluetooth Ant 3	Bluetooth Ant 6			
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
Front	0.301	0.532	0.196	0.086	0.728	0.618	0.728
Back	0.425	0.638	0.210	0.159	0.848	0.797	0.848
Left Side	0.050	0.047	0.028	0.013	0.075	0.060	0.075
Right Side	0.130	0.228	0.066	0.285	0.294	0.513	0.513
Top Side	0.601	0.363	0.282	0.027	0.645	0.390	0.645
Bottom Side							

**<Simultaneous Transmission analysis of AG0 + AG1 + WLAN+BT Worse-case>:**

Test Position	AG0	AG1	Wlan+BT worst case	AG0+AG1+Wlan +BT worse case
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
Front	0.447	1.253	0.728	2.43
Back	0.631	1.267	0.848	2.75
Left Side	0.632	0.870	0.075	1.58
Right Side	0.629	1.274	0.513	2.42
Top Side	0.634		0.645	1.28
Bottom Side		1.302		1.30

Note: The results marked yellow in above table refers to the detailed analysis corresponding to each position below tables.



Front					
Ant combination	AG1	AG0	Wlan+BT worst case	AG0+AG1+wlan +BT worse case	Note
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
Ant0-Ant1	0.910	0.447	0.728	2.09	Case 1
Ant0-Ant4	0.910	0.134	0.728	1.77	Case 2
Ant0-Ant5	0.910	0.093	0.728	1.73	Case 3
Ant0-Ant7	0.910	0.327	0.728	1.97	Case 4
Ant0-Ant10	0.910	0.262	0.728	1.90	Case 5
Ant2-Ant1	1.253	0.447	0.728	2.43	Case 6
Ant2-Ant4	1.253	0.134	0.728	2.12	Case 7
Ant2-Ant5	1.253	0.093	0.728	2.07	Case 8
Ant2-Ant7	1.253	0.327	0.728	2.31	Case 9
Ant2-Ant10	1.253	0.262	0.728	2.24	Case 10
Ant8-Ant1	0.521	0.447	0.728	1.70	Case 11
Ant8-Ant4	0.521	0.134	0.728	1.38	-
Ant8-Ant5	0.521	0.093	0.728	1.34	-
Ant8-Ant7	0.521	0.327	0.728	1.58	-
Ant8-Ant10	0.521	0.262	0.728	1.51	-

Back					
Ant combination	AG1	AG0	Wlan+BT worst case	AG0+AG1+wlan +BT worse case	Note
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
Ant0-Ant1	1.267	0.631	0.848	2.75	Case 12
Ant0-Ant4	1.267	0.615	0.848	2.73	Case 13
Ant0-Ant5	1.267	0.526	0.848	2.64	Case 14
Ant0-Ant7	1.267	0.485	0.848	2.60	Case 15
Ant0-Ant10	1.267	0.351	0.848	2.47	Case 16
Ant2-Ant1	0.973	0.631	0.848	2.45	Case 17
Ant2-Ant4	0.973	0.615	0.848	2.44	Case 18
Ant2-Ant5	0.973	0.526	0.848	2.35	Case 19
Ant2-Ant7	0.973	0.485	0.848	2.31	Case 20
Ant2-Ant10	0.973	0.351	0.848	2.17	Case 21
Ant8-Ant1	0.618	0.631	0.848	2.10	Case 22
Ant8-Ant4	0.618	0.615	0.848	2.08	Case 23
Ant8-Ant5	0.618	0.526	0.848	1.99	Case 24
Ant8-Ant7	0.618	0.485	0.848	1.95	Case 25
Ant8-Ant10	0.618	0.351	0.848	1.82	Case 26

Right side					
Ant combination	AG1	AG0	Wlan+BT worst case	AG0+AG1+wlan +BT worse case	Note
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
Ant0-Ant1	0.150	0.122	0.513	0.79	-
Ant0-Ant4	0.150	0.125	0.513	0.79	-
Ant0-Ant5	0.150	0.629	0.513	1.29	-
Ant0-Ant7	0.150	0.012	0.513	0.68	-
Ant0-Ant10	0.150	0.015	0.513	0.68	-
Ant2-Ant1	0.774	0.122	0.513	1.41	-
Ant2-Ant4	0.774	0.125	0.513	1.41	-
Ant2-Ant5	0.774	0.629	0.513	1.92	Case 27
Ant2-Ant7	0.774	0.012	0.513	1.30	-
Ant2-Ant10	0.774	0.015	0.513	1.30	-
Ant8-Ant1	1.274	0.122	0.513	1.91	Case 28



Ant8-Ant4	1.274	0.125	0.513	<b>1.91</b>	<b>Case 29</b>
Ant8-Ant5	1.274	0.629	0.513	<b>2.42</b>	<b>Case 30</b>
Ant8-Ant7	1.274	0.012	0.513	<b>1.80</b>	<b>Case 31</b>
Ant8-Ant10	1.274	0.015	0.513	<b>1.80</b>	<b>Case 32</b>

**<Simultaneous Transmission analysis of WLAN/BT only without WWAN>:**

NO	1	2	3		
Test Position	WLAN5GHz Ant 4+5	Bluetooth Ant 3	Bluetooth Ant 6	1+2	1+3
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
Front	0.532	0.196	0.086	0.73	0.62
Back	0.638	0.210	0.159	0.85	0.80
Left Side	0.047	0.028	0.013	0.08	0.06
Right Side	0.228	0.066	0.285	0.29	0.51
Top Side	0.363	0.282	0.027	0.65	0.39
Bottom Side				0.00	0.00

**17.5 Body-Worn Accessory Exposure Conditions**

**General Note:** The unit of SAR evaluation is W/kg.  
**Simultaneous Transmission Evaluation of WWAN+WLAN+BT:**

**<AG0 maximum report SAR>:**

Test Position	Ant1	Ant4	Ant5	Ant7	Ant10	MAX
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Front	0.875	0.192	0.569	0.602	0.578	0.875
Back	0.895	0.882	0.877	0.875	0.787	0.895

**<AG1 maximum report SAR>:**

Test Position	Ant0	Ant2	Ant8	MAX
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Front	1.166	1.299	0.537	1.299
Back	1.304	1.286	0.544	1.304

**<WLAN+BT Worse-case SAR>:**

NO	1	2	3	4	5	2+3	2+4	3+5	4+5	Wlan+BT worse case
	WLAN2.4GHz Ant 3+6	WLAN5GHz Ant 4+5	Bluetooth Ant 3	Bluetooth Ant 6	WLAN6GHz Ant 4+5					
Test Position	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
Front	0.248	0.275	0.257	0.155	0.172	0.532	0.430	0.429	0.327	0.532
Back	0.374	0.389	0.275	0.288	0.066	0.664	0.677	0.341	0.354	0.677

**<Simultaneous Transmission analysis of AG0 + AG1 + WLAN+BT Worse-case>:**

Test Position	AG0	AG1	Wlan+BT worst case	AG0+AG1+wlan +BT worse case
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
Front	0.875	1.299	0.532	2.71
Back	0.895	1.304	0.677	2.88

Note: The results marked yellow in above table refers to the detailed analysis corresponding to each position below tables.



Front					
Ant combination	AG1	AG0	Wlan+BT worst case	AG0+AG1+wlan +BT worst case	Note
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
Ant0-Ant1	1.166	0.875	0.532	2.57	Case 1
Ant0-Ant4	1.166	0.192	0.532	1.89	Case 2
Ant0-Ant5	1.166	0.569	0.532	2.27	Case 3
Ant0-Ant7	1.166	0.602	0.532	2.30	Case 4
Ant0-Ant10	1.166	0.578	0.532	2.28	Case 5
Ant2-Ant1	1.299	0.875	0.532	2.71	Case 6
Ant2-Ant4	1.299	0.192	0.532	2.02	Case 7
Ant2-Ant5	1.299	0.569	0.532	2.40	Case 8
Ant2-Ant7	1.299	0.602	0.532	2.43	Case 9
Ant2-Ant10	1.299	0.578	0.532	2.41	Case 10
Ant8-Ant1	0.537	0.875	0.532	1.94	Case 11
Ant8-Ant4	0.537	0.192	0.532	1.26	-
Ant8-Ant5	0.537	0.569	0.532	1.64	Case 27
Ant8-Ant7	0.537	0.602	0.532	1.67	Case 28
Ant8-Ant10	0.537	0.578	0.532	1.65	Case 29

Back					
Ant combination	AG1	AG0	Wlan+BT worst case	AG0+AG1+wlan +BT worst case	Note
	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
Ant0-Ant1	1.304	0.895	0.677	2.88	Case 12
Ant0-Ant4	1.304	0.882	0.677	2.86	Case 13
Ant0-Ant5	1.304	0.877	0.677	2.86	Case 14
Ant0-Ant7	1.304	0.875	0.677	2.86	Case 15
Ant0-Ant10	1.304	0.787	0.677	2.77	Case 16
Ant2-Ant1	1.286	0.895	0.677	2.86	Case 17
Ant2-Ant4	1.286	0.882	0.677	2.85	Case 18
Ant2-Ant5	1.286	0.877	0.677	2.84	Case 19
Ant2-Ant7	1.286	0.875	0.677	2.84	Case 20
Ant2-Ant10	1.286	0.787	0.677	2.75	Case 21
Ant8-Ant1	0.544	0.895	0.677	2.12	Case 22
Ant8-Ant4	0.544	0.882	0.677	2.10	Case 23
Ant8-Ant5	0.544	0.877	0.677	2.10	Case 24
Ant8-Ant7	0.544	0.875	0.677	2.10	Case 25
Ant8-Ant10	0.544	0.787	0.677	2.01	Case 26

<Simultaneous Transmission analysis of WLAN/BT only without WWAN>

NO	1	2	3	4	1+2	1+3	2+4	3+4	Wlan+BT worst case
Test Position	WLAN5GHz Ant 4+5	Bluetooth Ant 3	Bluetooth Ant 6	WLAN6GHz Ant 4+5	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
Front	0.844	0.257	0.155	0.172	1.10	1.00	0.43	0.33	1.10
Back	1.190	0.275	0.288	0.066	1.47	1.48	0.34	0.35	1.48



**17.6 Product specific 10g SAR Exposure Conditions**

**Remark:**

- For Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.

**General Note:** The unit of SAR evaluation is W/kg.

**Simultaneous Transmission Evaluation of WWAN+WLAN+BT+NFC:**

**<AG0 maximum report SAR>:**

Test Position	Ant1	Ant4	Ant5	Ant7	Ant10	MAX	MAX
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
Front	2.372					2.372	2.372
Back	2.483	2.081	0.905	1.821		2.483	2.483
Left Side	1.850			2.466	2.483	2.466	2.483
Right Side			2.471			2.471	2.471
Top Side	2.491					2.491	2.491
Bottom Side							

**<AG1 maximum report SAR>:**

Test Position	Ant0	Ant2	Ant8	MAX
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
Front	1.493	3.138		3.138
Back	1.909	2.153		2.153
Left Side				
Right Side			3.186	3.186
Top Side				
Bottom Side	3.198	3.207		3.207

**<WLAN+NFC Worse-case SAR>:**

NO	1	2	3	4	1+4	2+4	3+4	Wlan+NFC worse case
Test Position	WLAN2.4GHz Ant 3+6	WLAN5GHz Ant 4+5	WLAN6GHz Ant 4+5	NFC	Summed 10g SAR (W/kg)	Summed 10g SAR (W/kg)	Summed 10g SAR (W/kg)	10g SAR (W/kg)
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)				
Front		0.873	0.125	0.002	0.002	0.875	0.127	0.875
Back		0.655	0.078	0.020	0.020	0.675	0.098	0.675
Left Side			0.002	0.001	0.001	0.001	0.003	0.003
Right Side		0.559	0.104	0.001	0.001	0.560	0.105	0.560
Top Side	0.949	0.640	0.114	0.001	0.950	0.641	0.115	0.950
Bottom Side				0.001	0.001	0.001	0.001	0.001

**<Simultaneous Transmission analysis of AG0 + AG1 + WLAN +NFC Worse-case >:**

Test Position	AG0	AG1	Wlan+NFC worse case	AG0+AG1+wlan+NFC worse case
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	Summed 10g SAR (W/kg)
Front	2.372	3.138	0.875	<b>6.39</b>
Back	2.483	2.153	0.675	<b>5.31</b>
Left Side	2.483		0.003	2.49
Right Side	2.471	3.186	0.560	<b>6.22</b>
Top Side	2.491		0.950	3.44
Bottom Side		3.207	0.001	3.21

Note: The results marked yellow in above table refers to the detailed analysis corresponding to each position below tables.

Front					
Ant combination	AG1	AG0	Wlan+NFC worse case	AG0+AG1+wlan+NFC worse case	Note
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	Summed 10g SAR (W/kg)	
Ant0-Ant1	1.493	2.372	0.875	<b>4.74</b>	<b>Case 1</b>
Ant0-Ant4	1.493		0.875	2.37	-
Ant0-Ant5	1.493		0.875	2.37	-
Ant0-Ant7	1.493		0.875	2.37	-
Ant0-Ant10	1.493		0.875	2.37	-
Ant2-Ant1	3.138	2.372	0.875	<b>6.39</b>	<b>Case 2</b>
Ant2-Ant4	3.138		0.875	<b>4.01</b>	<b>Case 3</b>
Ant2-Ant5	3.138		0.875	<b>4.01</b>	<b>Case 4</b>
Ant2-Ant7	3.138		0.875	<b>4.01</b>	<b>Case 5</b>
Ant2-Ant10	3.138		0.875	<b>4.01</b>	<b>Case 6</b>
Ant8-Ant1		2.372	0.875	3.25	-
Ant8-Ant4			0.875	0.88	-
Ant8-Ant5			0.875	0.88	-
Ant8-Ant7			0.875	0.88	-
Ant8-Ant10			0.875	0.88	-
Back					
Ant combination	AG1	AG0	Wlan+NFC worse case	AG0+AG1+wlan+NFC worse case	Note
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	Summed 10g SAR (W/kg)	
Ant0-Ant1	1.909	2.483	0.675	<b>5.07</b>	<b>Case 7</b>
Ant0-Ant4	1.909	2.081	0.675	<b>4.67</b>	<b>Case 8</b>
Ant0-Ant5	1.909	0.905	0.675	3.49	-
Ant0-Ant7	1.909	1.821	0.675	<b>4.41</b>	<b>Case 9</b>
Ant0-Ant10	1.909		0.675	2.58	-
Ant2-Ant1	2.153	2.483	0.675	<b>5.31</b>	<b>Case 10</b>
Ant2-Ant4	2.153	2.081	0.675	<b>4.91</b>	<b>Case 11</b>
Ant2-Ant5	2.153	0.905	0.675	3.73	-
Ant2-Ant7	2.153	1.821	0.675	<b>4.65</b>	<b>Case 12</b>
Ant2-Ant10	2.153		0.675	2.83	-
Ant8-Ant1		2.483	0.675	3.16	-
Ant8-Ant4		2.081	0.675	2.76	-
Ant8-Ant5		0.905	0.675	1.58	-
Ant8-Ant7		1.821	0.675	2.50	-
Ant8-Ant10			0.675	0.68	-



Right side					
Ant combination	AG1	AG0	Wlan+NFC worse case	AG0+AG1+wlan+NFC worse case	Note
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	Summed 10g SAR (W/kg)	
Ant0-Ant1			0.560	0.56	-
Ant0-Ant4			0.560	0.56	-
Ant0-Ant5		2.471	0.560	3.03	-
Ant0-Ant7			0.560	0.56	-
Ant0-Ant10			0.560	0.56	-
Ant2-Ant1			0.560	0.56	-
Ant2-Ant4			0.560	0.56	-
Ant2-Ant5		2.471	0.560	3.03	-
Ant2-Ant7			0.560	0.56	-
Ant2-Ant10			0.560	0.56	-
Ant8-Ant1	3.186		0.560	3.75	-
Ant8-Ant4	3.186		0.560	3.75	-
Ant8-Ant5	3.186	2.471	0.560	6.22	Case 13
Ant8-Ant7	3.186		0.560	3.75	-
Ant8-Ant10	3.186		0.560	3.75	-

<Simultaneous Transmission analysis of WLAN +NFC only without WWAN>

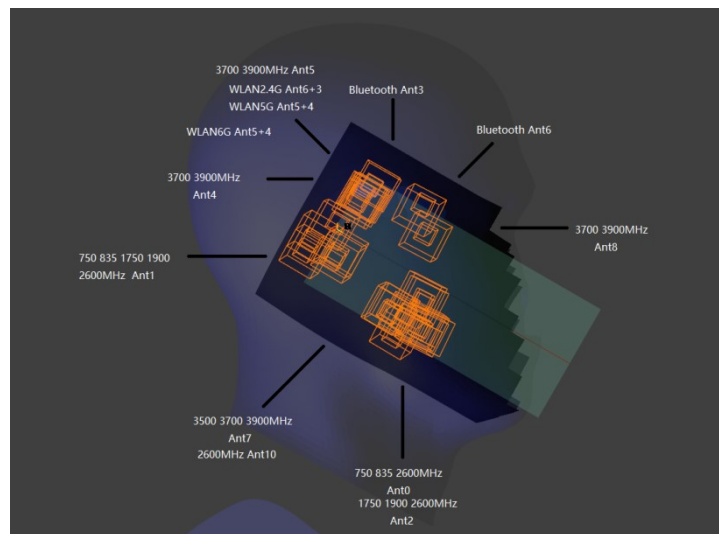
NO	2	3	4	2+4	3+4
Test Position	WLAN5GHz Ant 4+5	WLAN6GHz Ant 4+5	NFC	Summed 10g SAR (W/kg)	Summed 10g SAR (W/kg)
	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)		
Front	3.151	0.125	0.002	3.15	0.13
Back	2.359	0.078	0.020	2.38	0.10
Left Side		0.002	0.001	0.00	0.00
Right Side	1.755	0.104	0.001	1.76	0.11
Top Side	2.282	0.114	0.001	2.28	0.12
Bottom Side			0.001	0.00	0.00



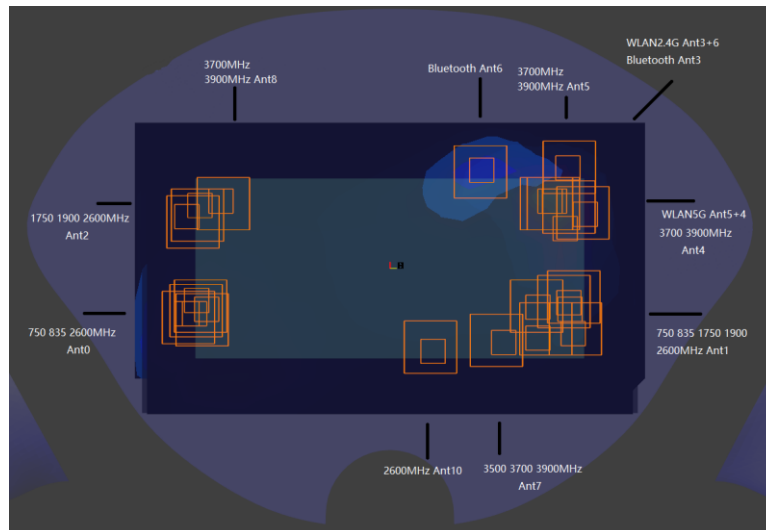
### 17.7 SPLSR Evaluation and Analysis

**General Note:**

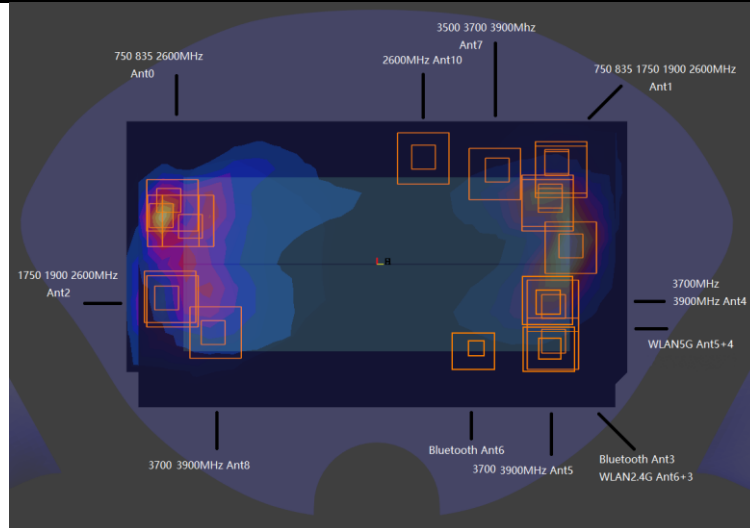
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of  $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ , where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2.  $SPLSR = (SAR1 + SAR2)1.5 / (\text{min. separation distance, mm})$ . If  $SPLSR \leq 0.04$  for 1g SAR and  $SPLSR \leq 0.10$  for 10g SAR, simultaneously transmission SAR measurement is not necessary.
3. Per April 2022 TCB Workshop Notes, AG0 was summed algebraically with the BT/WIFI Antenna 3/4/5/6 and NFC antenna for the purposes of hybrid SPLSR combination and they are located at the Top of the device.
4. Per April 2022 TCB Workshop, instead of doing a small volume scan over a co-located antenna pair, used summing the SAR values of the co-located pair and using that value in SPLSR calculation. In the calculation used the minimum distance between the spatially separated antenna and the closest antenna of the co-located antenna pair to be conservative.
5. The axis peak locations refer to Section 17.8.



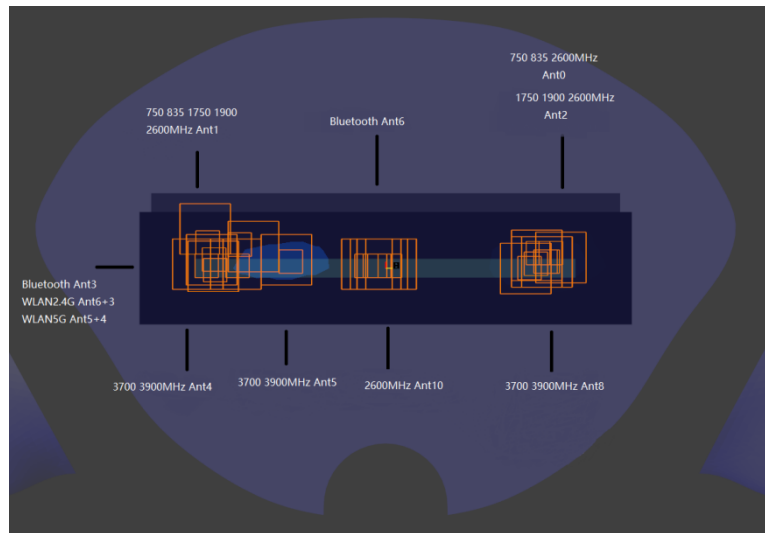
**Head WWAN+WLAN+BT Left Cheek 0mm**



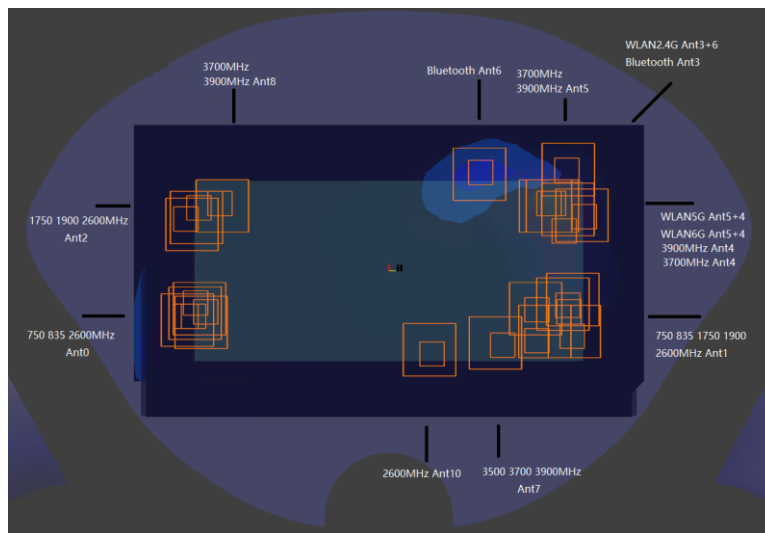
**Hotspot WWAN+WLAN+BT Back 5mm**



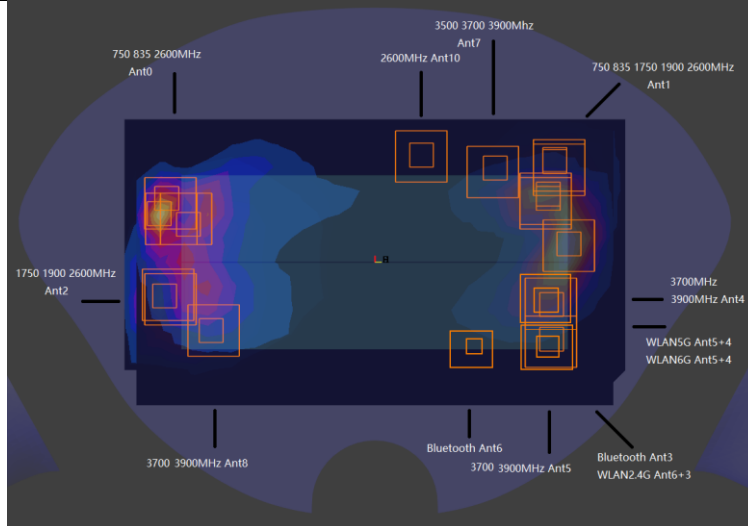
**Hotspot WWAN+WLAN+BT Front 5mm**



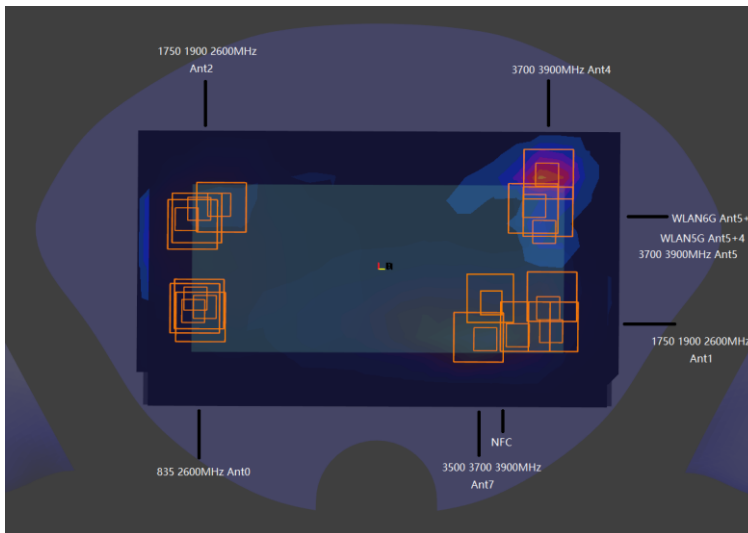
**Hotspot WWAN+WLAN+BT Right Side 5mm**



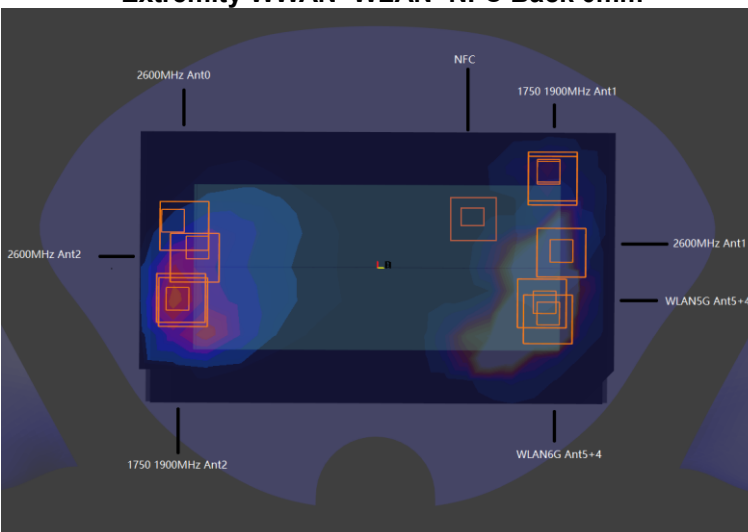
**Body-worn WWAN+WLAN+BT Back 5mm**



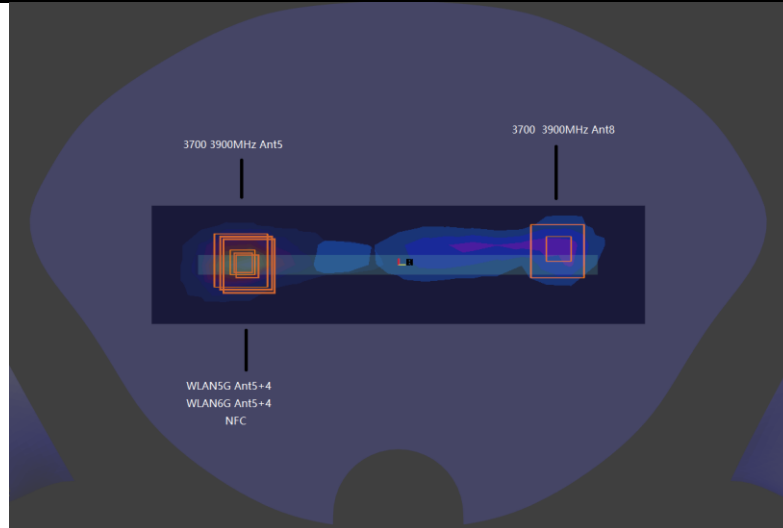
Body-worn WWAN+WLAN+BT Front 5mm



Extremity WWAN+WLAN+NFC Back 0mm



Extremity WWAN+WLAN+NFC Front 0mm



**Extremity WWAN+WLAN+NFC Right Side 0mm**

**<Head>**

Case No	Band	Position	SAR (W/kg)		Gap	SAR (W/kg) peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					(mm)	X	Y	Z				
Case 1	AG1-Ant0	Left Cheek	0.296	0.30	0mm	56.6	217.5	-172.4	106.6	1.81	0.02	Not required
	AG0-Ant4		1.51	0.843	0mm	56.4	324.1	-173.7				
	WLAN			0.669	0mm							
Case 2	AG1-Ant0	Left Cheek	0.296	0.30	0mm	56.6	217.5	-172.4	106.6	1.85	0.02	Not required
	AG0-Ant5		1.56	0.886	0mm	56.4	324.1	-173.7				
	WLAN			0.669	0mm							
Case 3	AG1-Ant0	Left Cheek	0.296	0.30	0mm	56.6	217.5	-172.4	79.1	1.86	0.03	Not required
	AG0-Ant10		1.56	0.891	0mm	39	294.6	-173				
	WLAN			0.669	0mm							
Case 4	AG1-Ant2	Left Cheek	0.157	0.16	0mm	55.2	211.2	-170	113.0	1.67	0.02	Not required
	AG0-Ant4		1.51	0.843	0mm	56.4	324.1	-173.7				
	WLAN			0.669	0mm							
Case 5	AG1-Ant2	Left Cheek	0.157	0.16	0mm	55.2	211.2	-170	113.0	1.71	0.02	Not required
	AG0-Ant5		1.56	0.886	0mm	56.4	324.1	-173.7				
	WLAN			0.669	0mm							
Case 6	AG1-Ant2	Left Cheek	0.157	0.16	0mm	55.2	211.2	-170	85.0	1.72	0.03	Not required
	AG0-Ant10		1.56	0.891	0mm	39	294.6	-173				
	WLAN			0.669	0mm							
Case 7	AG1-Ant8	Left Cheek	0.205	0.21	0mm	56.2	210.5	-172	113.6	1.72	0.02	Not required
	AG0-Ant4		1.51	0.843	0mm	56.4	324.1	-173.7				
	WLAN			0.669	0mm							
Case 8	AG1-Ant8	Left Cheek	0.205	0.21	0mm	56.2	210.5	-172	113.6	1.76	0.02	Not required
	AG0-Ant5		1.56	0.886	0mm	56.4	324.1	-173.7				
	WLAN			0.669	0mm							
Case 9	AG1-Ant8	Left Cheek	0.205	0.21	0mm	56.2	210.5	-172	85.8	1.77	0.03	Not required
	AG0-Ant10		1.56	0.891	0mm	39	294.6	-173				
	WLAN			0.669	0mm							



<Hotspot>

Case No	Band	Position	SAR (W/kg)		Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
						X	Y	Z				
Case 1	AG1-Ant0	Front	0.910	0.91	5mm	-41.1	-76	-204	149.0	2.09	0.02	Not required
	AG0-Ant1		0.447	1.18	5mm	-52.8	72.5	-204				
	WLAN		0.728	5mm								
Case 2	AG1-Ant0	Front	0.910	0.91	5mm	-41.1	-76	-204	119.9	1.77	0.02	Not required
	AG0-Ant4		0.134	0.86	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								
Case 3	AG1-Ant0	Front	0.910	0.91	5mm	-41.1	-76	-204	119.9	1.73	0.02	Not required
	AG0-Ant5		0.093	0.82	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								
Case 4	AG1-Ant0	Front	0.910	0.91	5mm	-41.1	-76	-204	119.9	1.97	0.02	Not required
	AG0-Ant7		0.327	1.06	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								
Case 5	AG1-Ant0	Front	0.910	0.91	5mm	-41.1	-76	-204	100.7	1.90	0.03	Not required
	AG0-Ant10		0.262	0.99	5mm	-72.2	19.8	-204				
	WLAN		0.728	5mm								
Case 6	AG1-Ant2	Front	1.253	1.25	5mm	-33.3	-79.5	-204	122.3	2.43	0.03	Not required
	AG0-Ant1		0.447	1.18	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								
Case 7	AG1-Ant2	Front	1.253	1.25	5mm	-33.3	-79.5	-204	122.3	2.12	0.03	Not required
	AG0-Ant4		0.134	0.86	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								
Case 8	AG1-Ant2	Front	1.253	1.25	5mm	-33.3	-79.5	-204	122.3	2.07	0.02	Not required
	AG0-Ant5		0.093	0.82	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								
Case 9	AG1-Ant2	Front	1.253	1.25	5mm	-33.3	-79.5	-204	122.3	2.31	0.03	Not required
	AG0-Ant7		0.327	1.06	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								
Case 10	AG1-Ant2	Front	1.253	1.25	5mm	-33.3	-79.5	-204	106.6	2.24	0.03	Not required
	AG0-Ant10		0.262	0.99	5mm	-72.2	19.8	-204				
	WLAN		0.728	5mm								
Case 11	AG1-Ant8	Front	0.521	0.52	5mm	4	-69	-204	113.6	1.70	0.02	Not required
	AG0-Ant1		0.447	1.18	5mm	-19.8	42	-207				
	WLAN		0.728	5mm								

Case No	Band	Position	SAR (W/kg)		Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
						X	Y	Z				
Case 12	AG1-Ant0	Back	1.267	1.27	5mm	-7	-80.5	-207	131.3	2.75	0.03	Not required
	AG0-Ant1		0.631	1.48	5mm	-65.5	37	-207				
	WLAN		0.848	5mm								
Case 13	AG1-Ant0	Back	1.267	1.27	5mm	-7	-80.5	-207	131.3	2.73	0.03	Not required
	AG0-Ant4		0.615	1.46	5mm	-65.5	37	-207				
	WLAN		0.848	5mm								
Case 14	AG1-Ant0	Back	1.267	1.27	5mm	-7	-80.5	-207	131.3	2.64	0.03	Not required
	AG0-Ant5		0.526	1.37	5mm	-65.5	37	-207				
	WLAN		0.848	5mm								
Case 15	AG1-Ant0	Back	1.267	1.27	5mm	-7	-80.5	-207	131.3	2.60	0.03	Not required



	AG0-Ant7		0.485	1.33	5mm	-65.5	37	-207					
	WLAN		0.848		5mm								
Case 16	AG1-Ant0	Back	1.267	1.27	5mm	14.3	-73.2	-207	119.7	2.47	0.03	Not required	
	AG0-Ant10		0.351		1.20	5mm	14	46.5					-207
	WLAN		0.848			5mm							
Case 17	AG1-Ant2	Back	0.973	0.97	5mm	-51.6	-95	-204	132.8	2.45	0.03	Not required	
	AG0-Ant1		0.631		1.48	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 18	AG1-Ant2	Back	0.973	0.97	5mm	-51.6	-95	-204	132.8	2.44	0.03	Not required	
	AG0-Ant4		0.615		1.46	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 19	AG1-Ant2	Back	0.973	0.97	5mm	-51.6	-95	-204	132.8	2.35	0.03	Not required	
	AG0-Ant5		0.526		1.37	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 20	AG1-Ant2	Back	0.973	0.97	5mm	-51.6	-95	-204	132.8	2.31	0.03	Not required	
	AG0-Ant7		0.485		1.33	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 21	AG1-Ant2	Back	0.973	0.97	5mm	-51.6	-95	-204	132.8	2.17	0.02	Not required	
	AG0-Ant10		0.351		1.20	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 22	AG1-Ant8	Back	0.618	0.62	5mm	-54	-71	-207	108.6	2.10	0.03	Not required	
	AG0-Ant1		0.631		1.48	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 23	AG1-Ant8	Back	0.618	0.62	5mm	-54	-71	-207	108.6	2.08	0.03	Not required	
	AG0-Ant4		0.615		1.46	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 24	AG1-Ant8	Back	0.618	0.62	5mm	-54	-71	-207	108.6	1.99	0.03	Not required	
	AG0-Ant5		0.526		1.37	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 25	AG1-Ant8	Back	0.618	0.62	5mm	-54	-71	-207	108.6	1.95	0.03	Not required	
	AG0-Ant7		0.485		1.33	5mm	-65.5	37					-207
	WLAN		0.848			5mm							
Case 26	AG1-Ant8	Back	0.618	0.62	5mm	-54	-71	-207	108.6	1.82	0.02	Not required	
	AG0-Ant10		0.351		1.20	5mm	-65.5	37					-207
	WLAN		0.848			5mm							

Case No	Band	Position	SAR (W/kg)		Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
						X	Y	Z				
Case 27	AG1-Ant2	Right Side	0.774	0.77	5mm	-28.2	63.2	-204	84.0	1.92	0.03	Not required
	AG0-Ant5		0.629	1.14	5mm	-28.8	-20.7	-207				
	WLAN		0.513		5mm							
Case 28	AG1-Ant8	Right Side	1.274	1.27	5mm	-30.6	75	-204	81.0	1.91	0.03	Not required
	AG0-Ant1		0.122	0.64	5mm	-25.6	-5.8	-204				
	WLAN		0.513		5mm							
Case 29	AG1-Ant8	Right Side	1.274	1.27	5mm	-30.6	75	-204	115.8	1.91	0.02	Not required
	AG0-Ant4		0.125	0.64	5mm	-28.8	-40.7	-207				
	WLAN		0.513		5mm							
Case 30	AG1-Ant8	Right Side	1.274	1.27	5mm	-30.6	75	-204	115.8	2.42	0.03	Not required



	AG0-Ant5		0.629	1.14	5mm	-28.8	-40.7	-207				
	WLAN		0.513		5mm							
Case 31	AG1-Ant8	Right Side	1.274	0.53	5mm	-30.6	75	-204	115.8	1.80	0.02	Not required
	AG0-Ant7		0.012		5mm	-28.8	-40.7	-207				
	WLAN		0.513		5mm							
Case 32	AG1-Ant8	Right Side	1.274	0.53	5mm	-30.6	75	-204	115.8	1.80	0.02	Not required
	AG0-Ant10		0.015		5mm	-28.8	-40.7	-207				
	WLAN		0.513		5mm							

**<Body-worn>**

Case No	Band	Position	SAR (W/kg)		Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					(mm)	X	Y	Z				
Case 1	AG1-Ant0	Front	1.166	1.17	5mm	-41.1	-76	-204	149.0	2.57	0.03	Not required
	AG0-Ant1		0.875	1.41	5mm	-52.8	72.5	-204				
	WLAN		0.532		5mm							
Case 2	AG1-Ant0	Front	1.166	1.17	5mm	-41.1	-76	-204	119.9	1.89	0.02	Not required
	AG0-Ant4		0.192	0.72	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 3	AG1-Ant0	Front	1.166	1.17	5mm	-41.1	-76	-204	119.9	2.27	0.03	Not required
	AG0-Ant5		0.569	1.10	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 4	AG1-Ant0	Front	1.166	1.17	5mm	-41.1	-76	-204	119.9	2.30	0.03	Not required
	AG0-Ant7		0.602	1.13	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 5	AG1-Ant0	Front	1.166	1.17	5mm	-41.1	-76	-204	100.7	2.28	0.03	Not required
	AG0-Ant10		0.578	1.11	5mm	-72.2	19.8	-204				
	WLAN		0.532		5mm							
Case 6	AG1-Ant2	Front	1.299	1.30	5mm	-33.3	-79.5	-204	122.3	2.71	0.04	Not required
	AG0-Ant1		0.875	1.41	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 7	AG1-Ant2	Front	1.299	1.30	5mm	-33.3	-79.5	-204	122.3	2.02	0.02	Not required
	AG0-Ant4		0.192	0.72	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 8	AG1-Ant2	Front	1.299	1.30	5mm	-33.3	-79.5	-204	122.3	2.40	0.03	Not required
	AG0-Ant5		0.569	1.10	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 9	AG1-Ant2	Front	1.299	1.30	5mm	-33.3	-79.5	-204	122.3	2.43	0.03	Not required
	AG0-Ant7		0.602	1.13	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 10	AG1-Ant2	Front	1.299	1.30	5mm	-33.3	-79.5	-204	106.6	2.41	0.04	Not required
	AG0-Ant10		0.578	1.11	5mm	-72.2	19.8	-204				
	WLAN		0.532		5mm							
Case 11	AG1-Ant8	Front	0.537	0.54	5mm	4	-69	-204	113.6	1.94	0.02	Not required
	AG0-Ant1		0.875	1.41	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 27	AG1-Ant8	Front	0.537	0.54	5mm	4	-69	-204	113.6	1.64	0.02	Not required
	AG0-Ant5		0.569	1.10	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							



Case 28	AG1-Ant8	Front	0.537	0.54	5mm	4	-69	-204	113.6	1.67	0.02	Not required
	AG0-Ant7		0.602	1.13	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							
Case 29	AG1-Ant8	Front	0.537	0.54	5mm	4	-69	-204	113.6	1.65	0.02	Not required
	AG0-Ant10		0.578	1.11	5mm	-19.8	42	-207				
	WLAN		0.532		5mm							

Case No	Band	Position	SAR (W/kg)		Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					(mm)	X	Y	Z				
Case 12	AG1-Ant0	Back	1.304	1.30	5mm	-7	-80.5	-207	131.3	2.88	0.04	Not required
	AG0-Ant1		0.895	1.57	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 13	AG1-Ant0	Back	1.304	1.30	5mm	-7	-80.5	-207	131.3	2.86	0.04	Not required
	AG0-Ant4		0.882	1.56	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 14	AG1-Ant0	Back	1.304	1.30	5mm	-7	-80.5	-207	131.3	2.86	0.04	Not required
	AG0-Ant5		0.877	1.55	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 15	AG1-Ant0	Back	1.304	1.30	5mm	-7	-80.5	-207	131.3	2.86	0.04	Not required
	AG0-Ant7		0.875	1.55	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 16	AG1-Ant0	Back	1.304	1.30	5mm	14.3	-73.2	-207	119.7	2.77	0.04	Not required
	AG0-Ant10		0.787	1.46	5mm	14	46.5	-207				
	WLAN		0.677		5mm							
Case 17	AG1-Ant2	Back	1.286	1.29	5mm	-51.6	-95	-204	132.8	2.86	0.04	Not required
	AG0-Ant1		0.895	1.57	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 18	AG1-Ant2	Back	1.286	1.29	5mm	-51.6	-95	-204	132.8	2.85	0.04	Not required
	AG0-Ant4		0.882	1.56	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 19	AG1-Ant2	Back	1.286	1.29	5mm	-51.6	-95	-204	132.8	2.84	0.04	Not required
	AG0-Ant5		0.877	1.55	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 20	AG1-Ant2	Back	1.286	1.29	5mm	-51.6	-95	-204	132.8	2.84	0.04	Not required
	AG0-Ant7		0.875	1.55	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 21	AG1-Ant2	Back	1.286	1.29	5mm	-51.6	-95	-204	132.8	2.75	0.03	Not required
	AG0-Ant10		0.787	1.46	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 22	AG1-Ant8	Back	0.544	0.54	5mm	-54	-71	-207	108.6	2.12	0.03	Not required
	AG0-Ant1		0.895	1.57	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 23	AG1-Ant8	Back	0.544	0.54	5mm	-54	-71	-207	108.6	2.10	0.03	Not required
	AG0-Ant4		0.882	1.56	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 24	AG1-Ant8	Back	0.544	0.54	5mm	-54	-71	-207	108.6	2.10	0.03	Not required
	AG0-Ant5		0.877	1.55	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							





Case 25	AG1-Ant8	Back	0.544	0.54	5mm	-54	-71	-207	108.6	2.10	0.03	Not required
	AG0-Ant7		0.875	1.55	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							
Case 26	AG1-Ant8	Back	0.544	0.54	5mm	-54	-71	-207	108.6	2.01	0.03	Not required
	AG0-Ant10		0.787	1.46	5mm	-65.5	37	-207				
	WLAN		0.677		5mm							

<Extremity>

Case No	Band	Position	SAR (W/kg)		Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					(mm)	X	Y	Z				
Case 1	AG1-Ant0	Front	1.493	1.49	0mm	-40.5	-86.1	-207	170.5	4.74	0.06	Not required
	AG0-Ant1		2.372	3.25	0mm	-66.4	82.4	-204				
	WLAN		0.875		0mm							
Case 2	AG1-Ant2	Front	3.138	3.14	0mm	-13.4	-80.6	-207	170.3	6.39	0.09	Not required
	AG0-Ant1		2.372	3.25	0mm	-30.6	88.8	-204				
	WLAN		0.875		0mm							
Case 3	AG1-Ant2	Front	3.138	3.14	0mm	-13.4	-80.6	-207	165.0	4.01	0.05	Not required
	AG0-Ant4			0.88	0mm	6	80.5	-177				
	WLAN		0.875		0mm							
Case 4	AG1-Ant2	Front	3.138	3.14	0mm	-13.4	-80.6	-207	165.0	4.01	0.05	Not required
	AG0-Ant5			0.88	0mm	6	80.5	-177				
	WLAN		0.875		0mm							
Case 5	AG1-Ant2	Front	3.138	3.14	0mm	-13.4	-80.6	-207	165.0	4.01	0.05	Not required
	AG0-Ant7			0.88	0mm	6	80.5	-177				
	WLAN		0.875		0mm							
Case 6	AG1-Ant2	Front	3.138	3.14	0mm	-13.4	-80.6	-207	165.0	4.01	0.05	Not required
	AG0-Ant10			0.88	0mm	6	80.5	-177				
	WLAN		0.875		0mm							

Case No	Band	Position	SAR (W/kg)		Gap	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					(mm)	X	Y	Z				
Case 7	AG1-Ant0	Back	1.909	1.91	0mm	12.5	-72.6	-207	125.0	5.07	0.09	Not required
	AG0-Ant1		2.483	3.16	0mm	23.4	48.3	-177				
	WLAN		0.675		0mm							
Case 8	AG1-Ant0	Back	1.909	1.91	0mm	12.5	-72.6	-207	125.0	4.67	0.08	Not required
	AG0-Ant4		2.081	2.76	0mm	23.4	48.3	-177				
	WLAN		0.675		0mm							
Case 9	AG1-Ant0	Back	1.909	1.91	0mm	12.5	-72.6	-207	115.5	4.41	0.08	Not required
	AG0-Ant7		1.821	2.50	0mm	5.2	42.7	-207				
	WLAN		0.675		0mm							
Case 10	AG1-Ant2	Back	2.153	2.15	0mm	-16.1	-84.2	-207	141.5	5.31	0.09	Not required
	AG0-Ant1		2.483	3.16	0mm	23.4	48.3	-177				
	WLAN		0.675		0mm							
Case 11	AG1-Ant2	Back	2.153	2.15	0mm	-16.1	-84.2	-207	141.5	4.91	0.08	Not required
	AG0-Ant4		2.081	2.76	0mm	23.4	48.3	-177				
	WLAN		0.675		0mm							
Case 12	AG1-Ant2	Back	2.153	2.15	0mm	-51.8	-72.1	-204	128.2	4.65	0.08	Not required



	AG0-Ant7		1.821	2.50	0mm	5.2	42.7	-207				
	WLAN		0.675		0mm							

Case No	Band	Position	SAR (W/kg)	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
						X	Y	Z				
Case 13	AG1-Ant8	Right side	3.186	3.19	0mm	-28.2	86.2	-204	164.8	6.22	0.09	Not required
	AG0-Ant5		2.471	3.03	0mm	-29.2	-78.6	-204				
	WLAN		0.560		0mm							

### 17.8 Maximum Report SAR And SAR Peak Locations

**General Note:**

1. The maximum report SAR and SAR Peak Locations corresponding to each position of each frequency band of each antenna in the below tables are as follows.
2. The unit of SAR evaluation is W/kg. The unit of x, y, z with Axis evaluation is mm.

<Head>

Left Cheek								
BT Ant3	SAR (W/kg)	0.28		WLAN2.4G MIMO	SAR (W/kg)	0.378		
	Axis	X 19.7 Y 332.5 Z -174.2			Axis	X 19.7 Y 332.5 Z -174.2		
BT Ant6	SAR (W/kg)	0.095		WLAN5G MIMO	SAR (W/kg)	0.374		WLAN6E MIMO
	Axis	X 56.4 Y 324.1 Z -173.7			Axis	X 16.2 Y 325.8 Z -174.3		SAR (W/kg)
								0.389
								Axis
								X 39.9 Y 327 Z -175.1

Left Cheek									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR (W/kg)	0.408					0.167		
	Axis	X 7.6 Y 295.4 Z -169					X 58 Y 216.6 Z -172.1		
GSM1900	SAR (W/kg)	0.38						0.073	
	Axis	X -10 Y 301.6 Z -166.5						X 62 Y 205.6 Z -169	
WCDMA II	SAR (W/kg)	0.423						0.095	
	Axis	X -9.5 Y 302.1 Z -166.5						X 62.3 Y 204.8 Z -169.2	
WCDMA IV	SAR (W/kg)	0.287						0.093	
	Axis	X -10.5 Y 298.5 Z -165.7						X 54.8 Y 210.2 Z -170	
WCDMA V	SAR (W/kg)	0.425					0.172		
	Axis	X 7.5 Y 295.2 Z -169					X 56.9 Y 214.5 Z -172.1		
LTE Band 2	SAR (W/kg)	0.409						0.155	
	Axis	X -9.3 Y 301.4 Z -166.5						X 61 Y 206 Z -169.4	
LTE Band 7	SAR (W/kg)	0.518				0.874	0.193	0.157	
	Axis	X 5.8 Y 311.8 Z -170				X 39 Y 294.6 Z -173	X 54.6 Y 202.4 Z -174.6	X 55.6 Y 208.1 Z -170.7	
LTE Band 12	SAR (W/kg)	0.358					0.194		
	Axis	X 2.1 Y 288 Z -167					X 57.1 Y 215.5 Z -172.1		
LTE Band 13	SAR (W/kg)	0.404					0.213		
	Axis	X 2.5 Y 287.6 Z -167					X 56.6 Y 216.4 Z -172.1		
LTE Band 26	SAR (W/kg)	0.406					0.197		
	Axis	X 7.7 Y 294.8 Z -169					X 56.6 Y 217.5 Z -172.4		
LTE Band 66	SAR (W/kg)	0.273						0.092	
	Axis	X -10.7 Y 298.9 Z -165.7						X 55.6 Y 211 Z -170.7	
LTE Band 41	SAR (W/kg)	0.569				0.891	0.185	0.089	
	Axis	X 5.5 Y 311.2 Z -170				X 36.8 Y 297.6 Z -172.9	X 49.5 Y 206.4 Z -175.4	X 55.1 Y 206.2 Z -170.1	



LTE Band 42 Part 27Q	SAR (W/kg)				0.238				
	Axis				X 35.6 Y 259.2 Z -171.3				
LTE Band 48	SAR (W/kg)				0.314				
	Axis				X 35.6 Y 259.2 Z -171.3				
FR1 n2	SAR (W/kg)	0.397						0.082	
	Axis	X -9.4 Y 302.4 Z -166.5						X 60.5 Y 205.6 Z -169	
FR1 n7	SAR (W/kg)	0.564						0.134	
	Axis	X 5.2 Y 309.6 Z -170						X 54.6 Y 207.9 Z -170.5	
FR1 n26	SAR (W/kg)	0.381					0.163		
	Axis	X 7.1 Y 293.6 Z -169					X 57 Y 215.8 Z -172.4		
FR1 n66	SAR (W/kg)	0.3						0.107	
	Axis	X -9.8 Y 296.6 Z -169						X 55.2 Y 211.2 Z -170	
FR1 n41	SAR (W/kg)	0.489				0.493	0.296	0.099	
	Axis	X 5.9 Y 309.8 Z -170				X 38 Y 295.3 Z -173	X 52.2 Y 204.8 Z -175.4	X 54.9 Y 205.8 Z -170.2	
FR1 n77	SAR (W/kg)		0.844	0.886	0.402				0.205
	Axis		X 18.6 Y 328.1 Z -171.3	X 25.7 Y 338.1 Z -174.1	X 36.4 Y 258.7 Z -171.4				X 56.2 Y 210.5 Z -172

<Hotspot>

Front					
BT Ant3	SAR	0.196	WLAN2.4G MIMO	SAR	0.301
	Axis	X -13.5 Y 82.3 Z -207		Axis	X -14.6 Y 81.6 Z -207
BT Ant6	SAR	0.086	WLAN5G MIMO	SAR	0.532
	Axis	X -19.8 Y 42 Z -207		Axis	X -10.9 Y 75.1 Z -207
Back					
BT Ant3	SAR	0.21	WLAN2.4G MIMO	SAR	0.425
	Axis	X -57.5 Y 72.5 Z -207		Axis	X -53 Y 67 Z -207
BT Ant6	SAR	0.159	WLAN5G MIMO	SAR	0.638
	Axis	X -65.5 Y 37 Z -207		Axis	X -53.4 Y 63.6 Z -207
Right side					
BT Ant3	SAR	0.066	WLAN2.4G MIMO	SAR	0.13
	Axis	X -26.3 Y -41.5 Z -207		Axis	X -25.8 Y -41.7 Z -207
BT Ant6	SAR	0.285	WLAN5G MIMO	SAR	0.228
	Axis	X -25.8 Y -61 Z -207		Axis	X -28.8 Y -40.7 Z -207

Front									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	0.401					0.581		
	Axis	X -53.2 Y 73.8 Z -204					X -41.5 Y -76.3 Z -204		
GSM1900	SAR	0.331						1.195	
	Axis	X -67.2 Y 74 Z -204						X -12.8 Y -83.1 Z -207	
WCDMA II	SAR	0.361						1.06	
	Axis	X -66.6 Y 74.2 Z -204						X -5.5 Y -87.4 Z -207	
WCDMA IV	SAR	0.286						1.025	
	Axis	X -67.6 Y 74.6 Z -204						X -8.3 Y -87.9 Z -207	
WCDMA V	SAR	0.279					0.77		
	Axis	X -52.4 Y 72.7 Z -204					X -41.2 Y -76 Z -204		
LTE Band 2	SAR	0.339						0.902	
	Axis	X -67 Y 75 Z -204						X -11 Y -87.1 Z -207	
LTE Band	SAR	0.417				0.236	0.907	0.799	



7	Axis	X -34 Y 81 Z -204				X -72.2 Y 19.8 Z -204	X -41.5 Y -89 Z -207	X -34 Y -80 Z -204	
LTE Band 12	SAR	0.354					0.489		
	Axis	X -53.5 Y 73.5 Z -204					X -53.5 Y -87 Z -204		
LTE Band 13	SAR	0.352					0.471		
	Axis	X -53.2 Y 73 Z -204					X -53 Y -86.5 Z -204		
LTE Band 26	SAR	0.418					0.398		
	Axis	X -53.5 Y 73.5 Z -204					X -41.5 Y -76.5 Z -204		
LTE Band 66	SAR	0.293						0.985	
	Axis	X -68.5 Y 75 Z -204						X -14.8 Y -85.9 Z -207	
LTE Band 41	SAR	0.345				0.257	0.483	0.55	
	Axis	X -33.6 Y 81.5 Z -204				X -71.8 Y 20.2 Z -204	X -41.2 Y -89.6 Z -207	X -33.6 Y -80.2 Z -204	
LTE Band 42 Part 27Q	SAR			0.327					
	Axis			X -65 Y 50 Z -204					
LTE Band 48	SAR			0.275					
	Axis			X -65 Y 50 Z -204					
FR1 n2	SAR	0.329						1.253	
	Axis	X -66.2 Y 75.2 Z -204						X -9.3 Y -85.6 Z -207	
FR1 n7	SAR	0.447						0.679	
	Axis	X -33.3 Y 82 Z -204						X -33.3 Y -79.5 Z -204	
FR1 n26	SAR	0.373					0.538		
	Axis	X -52.8 Y 72.5 Z -204					X -41.1 Y -76 Z -204		
FR1 n66	SAR	0.312						0.914	
	Axis	X -68.1 Y 74.2 Z -204						X -11.8 Y -84 Z -207	
FR1 n41	SAR	0.369				0.262	0.91	0.738	
	Axis	X -41.2 Y 78.9 Z -207				X -72 Y 20 Z -204	X -41.6 Y -89.3 Z -207	X -34.2 Y -79.8 Z -204	
FR1 n77	SAR		0.134	0.093	0.149				0.521
	Axis		X -34 Y 88 Z -204	X 6 Y 77 Z -204	X -65 Y 50 Z -204				X 4 Y -69 Z -204

Back									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	0.615					0.972		
	Axis	X -5.4 Y 66.1 Z -207					X 14.8 Y -74.7 Z -207		
GSM1900	SAR	0.631						0.842	
	Axis	X -4.3 Y 66.6 Z -207						X -51.4 Y -95.2 Z -204	
WCDMA II	SAR	0.626						0.825	
	Axis	X -7.8 Y 78.9 Z -207						X -51.6 Y -95 Z -204	
WCDMA IV	SAR	0.62						0.882	
	Axis	X -7 Y 79.2 Z -207						X -41.1 Y -105 Z -204	
WCDMA V	SAR	0.62					1.267		
	Axis	X -7.9 Y 77.6 Z -207					X 15.2 Y -75 Z -207		
LTE Band 2	SAR	0.619						0.739	
	Axis	X -5.8 Y 78.7 Z -207						X -52 Y -95 Z -204	
LTE Band 7	SAR	0.421				0.268	0.842	0.855	
	Axis	X -6.5 Y 73.5 Z -207				X 14 Y 46.5 Z -207	X -7 Y -80.5 Z -207	X -15 Y -103.5 Z -207	
LTE Band 12	SAR	0.626					0.853		
	Axis	X -5.4 Y 66.8 Z -207					X 3.5 Y -87 Z -204		
LTE Band 13	SAR	0.621					0.853		
	Axis	X -5.9 Y 66.1 Z -207					X 3.6 Y -87.2 Z -204		



LTE Band 26	SAR	0.615					0.715		
	Axis	X -8.4 Y 77.1 Z -207					X 14.6 Y -74.2 Z -207		
LTE Band 66	SAR	0.613						0.785	
	Axis	X -2.5 Y 78.2 Z -207						X -41.5 Y -105.5 Z -204	
LTE Band 41	SAR	0.368				0.351	0.464	0.729	
	Axis	X -7.5 Y 74 Z -207				X 14 Y 47.5 Z -207	X -6 Y -80.5 Z -207	X -16 Y -101.5 Z -207	
LTE Band 42 Part 27Q	SAR				0.457				
	Axis				X 10.5 Y 59.5 Z -207				
LTE Band 48	SAR				0.485				
	Axis				X 7.6 Y 58.6 Z -207				
FR1 n2	SAR	0.626						0.836	
	Axis	X -3.5 Y 75.8 Z -207						X -51.6 Y -95.2 Z -204	
FR1 n7	SAR	0.471						0.973	
	Axis	X -7 Y 73 Z -207						X -20.5 Y -100 Z -207	
FR1 n26	SAR	0.616					0.74		
	Axis	X -4.2 Y 76.6 Z -207					X 14.3 Y -73.2 Z -207		
FR1 n66	SAR	0.622						0.735	
	Axis	X -0.7 Y 76.8 Z -207						X -42.6 Y -104.8 Z -204	
FR1 n41	SAR	0.396				0.317	0.862	0.824	
	Axis	X -22.5 Y 76.5 Z -207				X 11 Y 46.5 Z -207	X -4 Y -83.5 Z -207	X -17 Y -102 Z -207	
FR1 n77	SAR		0.615	0.526	0.374				0.618
	Axis		X -45.5 Y 82 Z -207	X -66.2 Y 73 Z -207	X 6.8 Y 59.6 Z -207				X -54 Y -71 Z -207

Right side									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	0.108					0.108		
	Axis	X -26.6 Y -6.2 Z -204					X -25.6 Y -9.2 Z -204		
GSM1900	SAR	0.025						0.774	
	Axis	X -25.3 Y -72.1 Z -204						X -27.6 Y 69.2 Z -204	
WCDMA II	SAR	0.031						0.549	
	Axis	X -24.6 Y -71.8 Z -204						X -27.1 Y 68.8 Z -204	
WCDMA IV	SAR	0.006						0.491	
	Axis	X -25.5 Y -76.2 Z -204						X -27.6 Y 69.2 Z -204	
WCDMA V	SAR	0.076					0.15		
	Axis	X -26.2 Y -6.6 Z -204					X -25.1 Y -8.8 Z -204		
LTE Band 2	SAR	0.028						0.456	
	Axis	X -25 Y -72 Z -204						X -27.4 Y 69 Z -204	
LTE Band 7	SAR	0.033				0.015	0.057	0.244	
	Axis	X -28.2 Y -73 Z -204				X -25.5 Y -61.8 Z -207	X -32.4 Y 71.3 Z -204	X -27.4 Y 64 Z -204	
LTE Band 12	SAR	0.119					0.107		
	Axis	X -25.8 Y -6 Z -204					X -25.8 Y 1.5 Z -204		
LTE Band 13	SAR	0.069					0.07		
	Axis	X -25.6 Y -5.8 Z -204					X -25.6 Y 1.6 Z -204		
LTE Band 26	SAR	0.122					0.097		
	Axis	X -26.6 Y -6 Z -204					X -25.8 Y -9 Z -204		
LTE Band 66	SAR	0.009						0.443	
	Axis	X -25.8 Y -76.5 Z -204						X -27.4 Y 69 Z -204	
LTE Band 41	SAR	0.024				0.006	0.074	0.168	
	Axis	X -28.9 Y -72.3 Z -204				X -25.2 Y -62.1 Z -207	X -31.6 Y 71.2 Z -204	X -27.3 Y 64.2 Z -204	
LTE Band	SAR				NA				



42 Part 27Q	Axis				NA				
LTE Band 48	SAR				NA				
	Axis				NA				
FR1 n2	SAR	0.066						0.433	
	Axis	X -24.5 Y -72.2 Z -204						X -27.2 Y 68.9 Z -204	
FR1 n7	SAR	0.038						0.347	
	Axis	X -28.6 Y -73.1 Z -204						X -27.8 Y 63.6 Z -204	
FR1 n26	SAR	0.095					0.065		
	Axis	X -26.2 Y -6.3 Z -204					X -25.6 Y -9.2 Z -204		
FR1 n66	SAR	0.01						0.416	
	Axis	X -25.3 Y -76.1 Z -204						X -28.6 Y 69.5 Z -204	
FR1 n41	SAR	0.025				0.013	0.128	0.261	
	Axis	X -28.8 Y -72.1 Z -204				X -25.5 Y -62 Z -207	X -32.2 Y 71 Z -204	X -28.2 Y 63.2 Z -204	
FR1 n77	SAR		0.125	0.629	0.012				1.274
	Axis		X -34.6 Y -60 Z -204	X -25.8 Y -62 Z -204	X -34.6 Y -79 Z -204				X -30.6 Y 75 Z -204

<Body-worn>

Front									
BT Ant3	SAR	0.092	WLAN2.4G MIMO	SAR	0.248				
	Axis	X -13.5 Y 82.3 Z -207		Axis	X -14.6 Y 81.6 Z -207				
BT Ant6	SAR	0.046	WLAN5G MIMO	SAR	0.275	WLAN6E MIMO	SAR	0.172	
	Axis	X -19.8 Y 42 Z -207		Axis	X -10.9 Y 75.1 Z -207		Axis	X 1.5 Y 72.3 Z -207	
Back									
BT Ant3	SAR	0.102	WLAN2.4G MIMO	SAR	0.374				
	Axis	X -57.5 Y 72.5 Z -207		Axis	X -53 Y 67 Z -207				
BT Ant6	SAR	0.086	WLAN5G MIMO	SAR	0.389	WLAN6E MIMO	SAR	0.066	
	Axis	X -65.5 Y 37 Z -207		Axis	X -53.4 Y 63.6 Z -207		Axis	X -50.4 Y 64.5 Z -207	

Front									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	0.541					0.581		
	Axis	X -53.2 Y 73.8 Z -204					X -41.5 Y -76.3 Z -204		
GSM1900	SAR	0.423						1.299	
	Axis	X -67.2 Y 74 Z -204						X -12.8 Y -83.1 Z -207	
WCDMA II	SAR	0.506						1.295	
	Axis	X -66.6 Y 74.2 Z -204						X -5.5 Y -87.4 Z -207	
WCDMA IV	SAR	0.406						1.283	
	Axis	X -67.6 Y 74.6 Z -204						X -8.3 Y -87.9 Z -207	
WCDMA V	SAR	0.397					0.77		
	Axis	X -52.4 Y 72.7 Z -204					X -41.2 Y -76 Z -204		
LTE Band 2	SAR	0.48						1.278	
	Axis	X -67 Y 75 Z -204						X -11 Y -87.1 Z -207	
LTE Band 7	SAR	0.844				0.324	1.08	1.188	
	Axis	X -34 Y 81 Z -204				X -72.2 Y 19.8 Z -204	X -41.5 Y -89 Z -207	X -34 Y -80 Z -204	
LTE Band 12	SAR	0.493					0.489		
	Axis	X -53.5 Y 73.5 Z -204					X -53.5 Y -87 Z -204		
LTE Band 13	SAR	0.5					0.471		
	Axis	X -53.2 Y 73 Z -204					X -53 Y -86.5 Z -204		
LTE Band	SAR	0.515					0.398		



26	Axis	X -53.5 Y 73.5 Z -204					X -41.5 Y -76.5 Z -204		
LTE Band 66	SAR	0.423						1.293	
	Axis	X -68.5 Y 75 Z -204						X -14.8 Y -85.9 Z -207	
LTE Band 41	SAR	0.875			0.578	0.761		1.201	
	Axis	X -33.6 Y 81.5 Z -204			X -71.8 Y 20.2 Z -204	X -41.2 Y -89.6 Z -207	X -33.6 Y -80.2 Z -204		
LTE Band 42 Part 27Q	SAR			0.382					
	Axis			X -65 Y 50 Z -204					
LTE Band 48	SAR			0.343					
	Axis			X -65 Y 50 Z -204					
FR1 n2	SAR	0.46						1.271	
	Axis	X -66.2 Y 75.2 Z -204						X -9.3 Y -85.6 Z -207	
FR1 n7	SAR	0.815						1.067	
	Axis	X -33.3 Y 82 Z -204						X -33.3 Y -79.5 Z -204	
FR1 n26	SAR	0.527				0.538			
	Axis	X -52.8 Y 72.5 Z -204				X -41.1 Y -76 Z -204			
FR1 n66	SAR	0.438						1.296	
	Axis	X -68.1 Y 74.2 Z -204						X -11.8 Y -84 Z -207	
FR1 n41	SAR	0.825			0.401	1.166		1.229	
	Axis	X -41.2 Y 78.9 Z -207			X -72 Y 20 Z -204	X -41.6 Y -89.3 Z -207	X -34.2 Y -79.8 Z -204		
FR1 n77	SAR		0.192	0.569	0.602				0.537
	Axis		X -34 Y 88 Z -204	X 6 Y 77 Z -204	X -65 Y 50 Z -204				X 4 Y -69 Z -204

Back									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	0.831					0.972		
	Axis	X -5.4 Y 66.1 Z -207					X 14.8 Y -74.7 Z -207		
GSM1900	SAR	0.806						0.915	
	Axis	X -4.3 Y 66.6 Z -207						X -51.4 Y -95.2 Z -204	
WCDMA II	SAR	0.88						1.007	
	Axis	X -7.8 Y 78.9 Z -207						X -51.6 Y -95 Z -204	
WCDMA IV	SAR	0.885						1.116	
	Axis	X -7 Y 79.2 Z -207						X -41.1 Y -105 Z -204	
WCDMA V	SAR	0.882					1.267		
	Axis	X -7.9 Y 77.6 Z -207					X 15.2 Y -75 Z -207		
LTE Band 2	SAR	0.884						1.078	
	Axis	X -5.8 Y 78.7 Z -207						X -52 Y -95 Z -204	
LTE Band 7	SAR	0.883				0.471	1.288	1.272	
	Axis	X -6.5 Y 73.5 Z -207				X 14 Y 46.5 Z -207	X -7 Y -80.5 Z -207	X -15 Y -103.5 Z -207	
LTE Band 12	SAR	0.872					0.853		
	Axis	X -5.4 Y 66.8 Z -207					X 3.5 Y -87 Z -204		
LTE Band 13	SAR	0.881					0.853		
	Axis	X -5.9 Y 66.1 Z -207					X 3.6 Y -87.2 Z -204		
LTE Band 26	SAR	0.759					0.715		
	Axis	X -8.4 Y 77.1 Z -207					X 14.6 Y -74.2 Z -207		
LTE Band 66	SAR	0.888						1.114	
	Axis	X -2.5 Y 78.2 Z -207						X -41.5 Y -105.5 Z -204	
LTE Band 41	SAR	0.895				0.787	1.304	1.281	
	Axis	X -7.5 Y 74 Z -207				X 14 Y 47.5 Z -207	X -6 Y -80.5 Z -207	X -16 Y -101.5 Z -207	
LTE Band	SAR				0.617				



42 Part 27Q	Axis				X 10.5 Y 59.5 Z -207				
LTE Band 48	SAR				0.605				
	Axis				X 7.6 Y 58.6 Z -207				
FR1 n2	SAR	0.875						0.876	
	Axis	X -3.5 Y 75.8 Z -207						X -51.6 Y -95.2 Z -204	
FR1 n7	SAR	0.871						1.286	
	Axis	X -7 Y 73 Z -207						X -20.5 Y -100 Z -207	
FR1 n26	SAR	0.872				0.74			
	Axis	X -4.2 Y 76.6 Z -207				X 14.3 Y -73.2 Z -207			
FR1 n66	SAR	0.874						1.033	
	Axis	X -0.7 Y 76.8 Z -207						X -42.6 Y -104.8 Z -204	
FR1 n41	SAR	0.887				0.485	1.267	1.267	
	Axis	X -22.5 Y 76.5 Z -207				X 11 Y 46.5 Z -207	X -4 Y -83.5 Z -207	X -17 Y -102 Z -207	
FR1 n77	SAR		0.882	0.877	0.875				0.544
	Axis	X -45.5 Y 82 Z -207	X -66.2 Y 73 Z -207	X 6.8 Y 59.6 Z -207					X -54 Y -71 Z -207

<Extremity>

Front					
WLAN5G MIMO	SAR	0.981			
	Axis	X -10.9 Y 95.1 Z -207			
WLAN6E MIMO	SAR	0.125		NFC	SAR 0.002
	Axis	X -10.6 Y 95.1 Z -207			Axis X 6 Y 80.5 Z -177
Back					
WLAN5G MIMO	SAR	0.655			
	Axis	X -58.5 Y 74.1 Z -207			
WLAN6E MIMO	SAR	0.078		NFC	SAR 0.02
	Axis	X -62.5 Y 78.5 Z -207			Axis X 23.4 Y 48.3 Z -177
Right side					
WLAN5G MIMO	SAR	0.559			
	Axis	X -27.1 Y -80.6 Z -207			
WLAN6E MIMO	SAR	0.104		NFC	SAR 0.001
	Axis	X -26.3 Y -81.5 Z -207			Axis X -28.6 Y -80.1 Z -177

Front									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	NA					NA		
	Axis	NA					NA		
GSM1900	SAR	1.55						2.529	
	Axis	X -65.2 Y 82.6 Z -204						X -13.2 Y -82.6 Z -207	
WCDMA II	SAR	1.758						3.108	
	Axis	X -66.4 Y 82.4 Z -204						X -12.1 Y -81.3 Z -207	
WCDMA IV	SAR	1.351						3.136	
	Axis	X -66.8 Y 85.2 Z -204						X -7.6 Y -85.4 Z -207	
WCDMA V	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 2	SAR	1.543						2.769	
	Axis	X -65.8 Y 83.1 Z -204						X -13.4 Y -80.6 Z -207	
LTE Band 7	SAR	1.887				NA	NA	2.496	
	Axis	X -32.5 Y 90.1 Z -204				NA	NA	X -30.5 Y -86.7 Z -204	
LTE Band 12	SAR	NA					NA		





	Axis	NA					NA		
LTE Band 13	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 26	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 66	SAR	1.298						3.138	
	Axis	X -67.2 Y 84.6 Z -204						X -7.2 Y -86.1 Z -207	
LTE Band 41	SAR	2.15				NA	NA	NA	
	Axis	X -31.8 Y 89.6 Z -204				NA	NA	NA	
LTE Band 42 Part 27Q	SAR				NA				
	Axis				NA				
LTE Band 48	SAR				NA				
	Axis				NA				
FR1 n2	SAR	1.711						3.127	
	Axis	X -64.4 Y 82.8 Z -204						X -12.1 Y -81.1 Z -207	
FR1 n7	SAR	2.372						2.86	
	Axis	X -30.6 Y 88.8 Z -204						X -31.2 Y -88.5 Z -204	
FR1 n26	SAR	NA					NA		
	Axis	NA					NA		
FR1 n66	SAR	1.497						3.127	
	Axis	X -66.2 Y 83.8 Z -204						X -8.3 Y -84.8 Z -207	
FR1 n41	SAR	2.358				NA	1.493	2.807	
	Axis	X -31.1 Y 89.2 Z -204				NA	X -40.5 Y -86.1 Z -207	X -32.9 Y -86.4 Z -204	
FR1 n77	SAR		NA	NA	NA				NA
	Axis		NA	NA	NA				NA

Back									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	NA					1.885		
	Axis	NA					X 12.5 Y -72.6 Z -207		
GSM1900	SAR	2.336						NA	
	Axis	X -2.8 Y 63.1 Z -207						NA	
WCDMA II	SAR	2.441						1.624	
	Axis	X -2.9 Y 64.2 Z -207						X -52.4 Y -74.2 Z -204	
WCDMA IV	SAR	2.432						2.153	
	Axis	X -6.6 Y 78.4 Z -207						X -42.6 Y -87.7 Z -204	
WCDMA V	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 2	SAR	1.821						1.659	
	Axis	X -3.8 Y 63.2 Z -207						X -51.8 Y -72.1 Z -204	
LTE Band 7	SAR	2.072				NA	NA	1.7	
	Axis	X -5.9 Y 74.9 Z -207				NA	NA	X -13.5 Y -87.5 Z -207	
LTE Band 12	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 13	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 26	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 66	SAR	1.925						2.1	
	Axis	X -6.9 Y 77.1 Z -207						X -40.1 Y -85.7 Z -204	



LTE Band 41	SAR	1.97				NA	NA	NA	
	Axis	X -5.2 Y 73.3 Z -207				NA	NA	NA	
LTE Band 42 Part 27Q	SAR				1.633				
	Axis				X 11.2 Y 45.2 Z -207				
LTE Band 48	SAR				1.674				
	Axis				X 6.8 Y 46.2 Z -207				
FR1 n2	SAR	2.483						1.877	
	Axis	X -4.2 Y 64.1 Z -207						X -53.1 Y -74.2 Z -204	
FR1 n7	SAR	2.202						1.894	
	Axis	X -5.1 Y 72.8 Z -207						X -16.1 Y -84.2 Z -207	
FR1 n26	SAR	NA					NA		
	Axis	NA					NA		
FR1 n66	SAR	2.464						2.129	
	Axis	X -7.5 Y 76.1 Z -207						X -42.3 Y -82.6 Z -204	
FR1 n41	SAR	2.229				NA	1.909	1.818	
	Axis	X -4.8 Y 71.1 Z -207				NA	X -5.2 Y -80.1 Z -207	X -15.8 Y -86.3 Z -207	
FR1 n77	SAR		2.081	0.905	1.821				NA
	Axis		X -46.1 Y 80.5 Z -207	X -64.8 Y 76.2 Z -207	X 5.2 Y 42.7 Z -207				NA

Right side									
Band		Ant1	Ant4	Ant5	Ant7	Ant10	Ant0	Ant2	Ant8
GSM850	SAR	NA					NA		
	Axis	NA					NA		
GSM1900	SAR	NA						NA	
	Axis	NA						NA	
WCDMA II	SAR	NA						NA	
	Axis	NA						NA	
WCDMA IV	SAR	NA						NA	
	Axis	NA						NA	
WCDMA V	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 2	SAR	NA						NA	
	Axis	NA						NA	
LTE Band 7	SAR	NA				NA	NA	NA	
	Axis	NA				NA	NA	NA	
LTE Band 12	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 13	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 26	SAR	NA					NA		
	Axis	NA					NA		
LTE Band 66	SAR	NA						NA	
	Axis	NA						NA	
LTE Band 41	SAR	NA				NA	NA	NA	
	Axis	NA				NA	NA	NA	
LTE Band 42 Part 27Q	SAR				NA				
	Axis				NA				
LTE Band 48	SAR				NA				
	Axis				NA				
FR1 n2	SAR	NA						NA	



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	Axis	NA						NA	
FR1 n7	SAR	NA						NA	
	Axis	NA						NA	
FR1 n26	SAR	NA					NA		
	Axis	NA					NA		
FR1 n66	SAR	NA						NA	
	Axis	NA						NA	
FR1 n41	SAR	NA				NA	NA	NA	
	Axis	NA				NA	NA	NA	
FR1 n77	SAR		NA	2.471	NA				3.186
	Axis		NA	X -29.2 Y -78.6 Z -204	NA				X -28.2 Y 86.2 Z -204

## **18. Supplemental Tuner Tests Results**

### **General Note:**

1. This device implements impedance tuner (208 states) antenna tuning techniques in the LTE Band 5/12/13/17/26, and 5GNR n5/26 for ANT0.
2. This device implements impedance tuner (208 states) antenna tuning techniques in the LTE Band 2/4/5/7/12/13/17/26/38/41/66 and 5GNR n2/5/7/26/38/41/66 for ANT1.
3. This device implements impedance tuner (16 states) antenna tuning techniques in the LTE Band 2/4/7/38/41/66 and 5GNR n2/7/38/41/66 for ANT2.
4. LTE B17 / B5 / B4 / B38 SAR test was covered by LTE B12 / B26 / B66 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced.
5. 5GNR n26 / n38 SAR test was covered by 5GNR n5 / n41; according to April 2015 TCB workshop, SAR test for overlapping NR bands can be reduced.
6. Per 2019, April TCBC Workshop titled "RF Exposure Procedures", the following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions.
  - 1) SAR is measured according to required procedures with dynamic tuner active allowing device to automatically tune. Auto-tune state determined by device during normal SAR measurement verified and listed alongside the reported SAR results.
  - 2) Total number tuner states divided evenly among each supported band / air interface and exposure condition combination.
  - 3) The tuner state was established remotely through Wi-Fi so that the device is not moved for the entire series of single point SAR for the tuner states in each combination (band, mode, exposure conditions).
  - 4) Single point measurements performed at the peak SAR location of the highest measured SAR configuration for each combination. SAR probe remains stationary throughout the entire series of single point measurements for each combination.
  - 5) If any single point SAR measurement result is  $> 1.2$  W/kg for 1gSAR (or  $> 3.0$  W/kg for 10gSAR) for a band/exposure condition combination set, all supported tuner states are evaluated with single point SAR measurements for the combination.
7. The above test procedures were followed to demonstrate that the SAR results in Section 16 represented the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values.
8. To evaluate all of the tuner states, the 208 tuner states for ANT0/1 and the 16 tuner states for ANT2 is divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination. When the single point SAR or 1g SAR was  $> 1.2$  W/kg or 10g SAR was  $> 3.0$  W/kg for a particular band / mode / exposure condition, point SAR measurements were made for all 144 tuner states.
9. According to KDB 648474 D04 v01r03, in order to reduce the number of SAR tests required to demonstrate compliance for the numerous tuning states, certain SAR screening procedures were considered to identify the higher SAR between body-worn and hotspot scenarios that need normally required SAR measurements and allow SAR test reduction for the lower SAR conditions.
10. According to KDB 648474 D04 v01r03, this design will provide the highest power at different user scenarios and would not influence to the antenna characteristics other than impedance matching. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
11. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

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## **19. Uncertainty Assessment**

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is  $< 1.5$  W/kg and the measured 10-g SAR within a frequency band is  $< 3.75$  W/kg. The expanded SAR measurement uncertainty must be  $\leq 30\%$ , for a confidence interval of  $k = 2$ . If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

## **20. References**

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- [13] FCC KDB 941225 D06 v02r01, “SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities”, Oct 2015.
- [14] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

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