

1. SPLSR Evaluation and Analysis

Per FCC KDB Publication 447498 D01v06, when the sum of the standalone transmitters is more than 1.6 W/kg for 1g, the SAR sum to peak locations can be analyzed to determine SAR distribution overlaps. When the SAR peak to location ratio (shown below) for each pair antennas is ≤ 0.04 for 1g, simultaneous SAR evaluation is not required. The distance between the transmitters was calculated using the following formula.

$$\text{Distance}_{\text{Tx1-Tx2}} = R_i = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2} \text{ (Head)}$$

$$\text{SPLS Ratio} = \frac{(SAR_1 + SAR_2)^{1.5}}{R_i}$$

2. Head (Right Touch) SPLSR Evaluation and Analysis (1.599 W/kg)

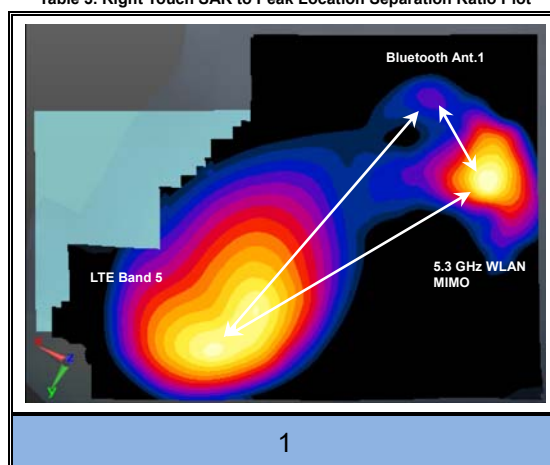
Table 1. Peak SAR Locations for Right Touch

Mode/Band	X (cm)	Y (cm)	Z (cm)	Reported SAR(W/kg)
LTE Band 5	4.40	6.86	-0.09	0.893
Bluetooth	2.73	-3.17	-0.14	0.223
5.3 GHz WLAN MIMO	-0.41	-1.57	0.03	0.483

Table 2. Right Touch SAR to Peak Location Separation Ratio Calculations (1.599 W/kg)

Antenna Pair		Standalone 1g SAR (W/kg)		Standalone SAR Sum (W/kg)	Peak SAR Separation Distance (mm)	SPLS Ratio	Plot Number
Ant "a"	Ant "b"	a	b	a+b	$D_{\perp,ab}$	$(a+b)^{1.5} / D_{\perp,ab}$	
LTE Band 5	Bluetooth Ant.1	0.893	0.223	1.116	101.74	0.012	1
LTE Band 5	5.3 GHz WLAN MIMO	0.893	0.483	1.376	97.10	0.017	
Bluetooth Ant.1	5.3 GHz WLAN MIMO	0.223	0.483	0.706	35.30	0.017	

Table 3. Right Touch SAR to Peak Location Separation Ratio Plot



3. Simultaneous Transmission Conclusion

The above numerical summed SAR results and SPLAR for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine 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 6.3.4.1.2.