

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	GSM Voice + WLAN2.4GHz	Yes	Yes		
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	Yes
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	Yes
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes	Yes
5.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes		
6.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		Yes
7.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		Yes
8.	LTE + WLAN5.3/5.5GHz	Yes	Yes		Yes
9.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes		
10.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
11.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
12.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
13.	GSM Voice + Bluetooth	Yes	Yes		
14.	GPRS/EDGE + Bluetooth	Yes	Yes	Yes	Yes
15.	WCDMA + Bluetooth	Yes	Yes	Yes	Yes
16.	LTE + Bluetooth	Yes	Yes	Yes	Yes
17.	Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
18.	Bluetooth + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
19.	GSM Voice + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		
20.	GPRS/EDGE + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
21.	WCDMA + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
22.	LTE + Bluetooth + WLAN5.3/5.5GHz	Yes	Yes		Yes
23.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes		
24.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
25.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes
26.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	Yes

General Note:

- This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- This device 2.4GHz WLAN/ 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).
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
- WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
- For simultaneously analysis of hotspot and body-worn, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
- Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
- The reported 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.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{ separation distance, mm})$, 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 $SPLSR \leq 0.04$, 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.
 - The SPLSR calculated results please refer to section 16.5.

16.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth		
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)		
GSM	GSM850	Right Cheek	0.185	0.483	0.724	0.230	0.67	1.14
		Right Tilted	0.127	0.396	0.640	0.224	0.52	0.99
		Left Cheek	0.259	0.483	0.724	0.139	0.74	1.12
		Left Tilted	0.106	0.483	0.724	0.128	0.59	0.96
	GSM1900	Right Cheek	0.079	0.483	0.724	0.230	0.56	1.03
		Right Tilted	0.046	0.396	0.640	0.224	0.44	0.91
		Left Cheek	0.064	0.483	0.724	0.139	0.55	0.93
		Left Tilted	0.041	0.483	0.724	0.128	0.52	0.89
WCDMA	Band V	Right Cheek	0.195	0.483	0.724	0.230	0.68	1.15
		Right Tilted	0.121	0.396	0.640	0.224	0.52	0.99
		Left Cheek	0.295	0.483	0.724	0.139	0.78	1.16
		Left Tilted	0.138	0.483	0.724	0.128	0.62	0.99
	Band IV	Right Cheek	0.094	0.483	0.724	0.230	0.58	1.05
		Right Tilted	0.054	0.396	0.640	0.224	0.45	0.92
		Left Cheek	0.117	0.483	0.724	0.139	0.60	0.98
		Left Tilted	0.041	0.483	0.724	0.128	0.52	0.89
	Band II	Right Cheek	0.153	0.483	0.724	0.230	0.64	1.11
		Right Tilted	0.067	0.396	0.640	0.224	0.46	0.93
		Left Cheek	0.119	0.483	0.724	0.139	0.60	0.98
		Left Tilted	0.041	0.483	0.724	0.128	0.52	0.89
LTE	Band 26	Right Cheek	0.202	0.483	0.724	0.230	0.69	1.16
		Right Tilted	0.123	0.396	0.640	0.224	0.52	0.99
		Left Cheek	0.286	0.483	0.724	0.139	0.77	1.15
		Left Tilted	0.133	0.483	0.724	0.128	0.62	0.99
	Band 4	Right Cheek	0.130	0.483	0.724	0.230	0.61	1.08
		Right Tilted	0.075	0.396	0.640	0.224	0.47	0.94
		Left Cheek	0.163	0.483	0.724	0.139	0.65	1.03
		Left Tilted	0.065	0.483	0.724	0.128	0.55	0.92
	Band 2	Right Cheek	0.138	0.483	0.724	0.230	0.62	1.09
		Right Tilted	0.076	0.396	0.640	0.224	0.47	0.94
		Left Cheek	0.131	0.483	0.724	0.139	0.61	0.99
		Left Tilted	0.047	0.483	0.724	0.128	0.53	0.90
	Band 7	Right Cheek	0.386	0.483	0.724	0.230	0.87	1.34
		Right Tilted	0.170	0.396	0.640	0.224	0.57	1.03
		Left Cheek	0.292	0.483	0.724	0.139	0.78	1.16
		Left Tilted	0.337	0.483	0.724	0.128	0.82	1.19
	Band 41	Right Cheek	0.245	0.483	0.724	0.230	0.73	1.20
		Right Tilted	0.103	0.396	0.640	0.224	0.50	0.97
		Left Cheek	0.161	0.483	0.724	0.139	0.64	1.02
		Left Tilted	0.198	0.483	0.724	0.128	0.68	1.05

16.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Front	0.554	0.319	0.177	0.080	0.87			0.81		
		Back	1.306	0.319	0.695	0.133	1.63	0.01	01	2.13	0.02	02
		Left Side	0.552	0.319	0.695	0.133	0.87			1.38		
		Right Side	0.252				0.25			0.25		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	0.585				0.59			0.59		
	GSM1900	Front	0.799	0.319	0.177	0.080	1.12			1.06		
		Back	1.175	0.319	0.695	0.133	1.49			2.00	0.02	03
		Left Side	0.056	0.319	0.695	0.133	0.38			0.88		
		Right Side	0.028				0.03			0.03		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	1.352				1.35			1.35		
WCDMA	Band V	Front	0.678	0.319	0.177	0.080	1.00			0.94		
		Back	1.183	0.319	0.695	0.133	1.50			2.01	0.02	04
		Left Side	0.390	0.319	0.695	0.133	0.71			1.22		
		Right Side	0.168				0.17			0.17		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	0.735				0.74			0.74		
	Band IV	Front	0.688	0.319	0.177	0.080	1.01			0.95		
		Back	1.090	0.319	0.695	0.133	1.41			1.92	0.02	05
		Left Side	0.058	0.319	0.695	0.133	0.38			0.89		
		Right Side	0.036				0.04			0.04		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	1.341				1.34			1.34		
	Band II	Front	0.609	0.319	0.177	0.080	0.93			0.87		
		Back	1.044	0.319	0.695	0.133	1.36			1.87	0.02	06
		Left Side	0.040	0.319	0.695	0.133	0.36			0.87		
		Right Side	0.025				0.03			0.03		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	1.198				1.20			1.20		



WWAN Band		Exposure Position	1	2	3	4	1+2			1+3+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
LTE	Band 26	Front	0.723	0.319	0.177	0.080	1.04			0.98		
		Back	1.135	0.319	0.695	0.133	1.45			1.96	0.02	07
		Left Side	0.404	0.319	0.695	0.133	0.72			1.23		
		Right Side	0.145				0.15			0.15		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	0.735				0.74			0.74		
	Band 4	Front	0.639	0.319	0.177	0.080	0.96			0.90		
		Back	0.831	0.319	0.695	0.133	1.15			1.66	0.01	08
		Left Side	0.054	0.319	0.695	0.133	0.37			0.88		
		Right Side	0.035				0.04			0.04		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	1.049				1.05			1.05		
	Band 2	Front	0.568	0.319	0.177	0.080	0.89			0.83		
		Back	1.079	0.319	0.695	0.133	1.40			1.91	0.02	09
		Left Side	0.036	0.319	0.695	0.133	0.36			0.86		
		Right Side	0.025				0.03			0.03		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	1.288				1.29			1.29		
	Band 7	Front	0.675	0.319	0.177	0.080	0.99			0.93		
		Back	1.391	0.319	0.695	0.133	1.71	0.02	10	2.22	0.02	11
		Left Side	0.068	0.319	0.695	0.133	0.39			0.90		
		Right Side	0.559				0.56			0.56		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	0.736				0.74			0.74		
	Band 41	Front	0.808	0.319	0.177	0.080	1.13			1.07		
		Back	1.334	0.319	0.695	0.133	1.65	0.01	12	2.16	0.02	13
		Left Side	0.064	0.319	0.695	0.133	0.38			0.89		
		Right Side	0.507				0.51			0.51		
		Top Side		0.319	0.695	0.133	0.32			0.83		
		Bottom Side	0.568				0.57			0.57		



16.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2			1+3+4		
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed 1g SAR (W/kg)	SPLSR	Case No	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
GSM	GSM850	Front	0.554	0.319	0.201	0.080	0.87			0.84		
		Back	1.306	0.319	0.840	0.133	1.63	0.01	1	2.28	0.02	14
		Back at 5mm Headset	0.639				0.64			0.64		
	GSM1900	Front	1.269	0.319	0.201	0.080	1.59			1.55		
		Back	1.431	0.319	0.840	0.133	1.75	0.02	15	2.40	0.02	16
		Back at 5mm Headset	1.205				1.21			1.21		
WCDMA	Band V	Front	0.678	0.319	0.201	0.080	1.00			0.96		
		Back	1.183	0.319	0.840	0.133	1.50			2.16	0.02	17
	Band IV	Front	1.039	0.319	0.201	0.080	1.36			1.32		
		Back	1.404	0.319	0.840	0.133	1.72	0.01	18	2.38	0.02	19
	Band II	Back at 5mm Headset	1.430				1.43			1.43		
		Front	1.033	0.319	0.201	0.080	1.35			1.31		
		Back	1.426	0.319	0.840	0.133	1.75	0.02	20	2.40	0.03	21
		Back at 5mm Headset	1.301				1.30			1.30		
LTE	Band 26	Front	0.723	0.319	0.201	0.080	1.04			1.00		
		Back	1.135	0.319	0.840	0.133	1.45			2.11	0.02	22
	Band 4	Front	0.780	0.319	0.201	0.080	1.10			1.06		
		Back	1.158	0.319	0.840	0.133	1.48			2.13	0.02	23
	Band 2	Front	1.102	0.319	0.201	0.080	1.42			1.38		
		Back	1.440	0.319	0.840	0.133	1.76	0.02	24	2.41	0.02	25
		Back at 5mm Headset	1.251				1.25			1.25		
	Band 7	Front	0.675	0.319	0.201	0.080	0.99			0.96		
		Back	1.391	0.319	0.840	0.133	1.71	0.02	10	2.36	0.02	26
		Back at 5mm Headset	1.225				1.23			1.23		
	Band 41	Front	0.808	0.319	0.201	0.080	1.13			1.09		
		Back	1.334	0.319	0.840	0.133	1.65	0.01	12	2.31	0.02	27
		Back at 5mm Headset	1.059				1.06			1.06		

16.4 Product specific 10g SAR Exposure Conditions

WWAN Band		Exposure Position	1	2	1+2		
			WWAN	5GHz WLAN	Summed 10g SAR (W/kg)	SPLSR	Case No
			10g SAR (W/kg)	10g SAR (W/kg)			
GSM	GSM1900	Front	2.904	0.494	3.40		
		Back	3.510	0.494	4.00	0.05	28
		Bottom side	2.581		2.58		
WCDMA	Band IV	Front	2.429	0.494	2.92		
		Back	3.260	0.494	3.75		
		Bottom side	3.138		3.14		
	Band II	Front	3.100	0.494	3.59		
		Back	3.500	0.494	3.99		
		Bottom side	3.086		3.09		
LTE	Band 4	Front	2.543	0.494	3.04		
		Back	3.432	0.494	3.93		
		Bottom side	3.428		3.43		
	Band 2	Front	2.918	0.494	3.41		
		Back	3.463	0.494	3.96		
		Bottom side	3.202		3.20		
	Band 7	Back	2.903	0.494	3.40		
	Band 41	Front	1.893	0.494	2.39		
		Back	3.223	0.494	3.72		

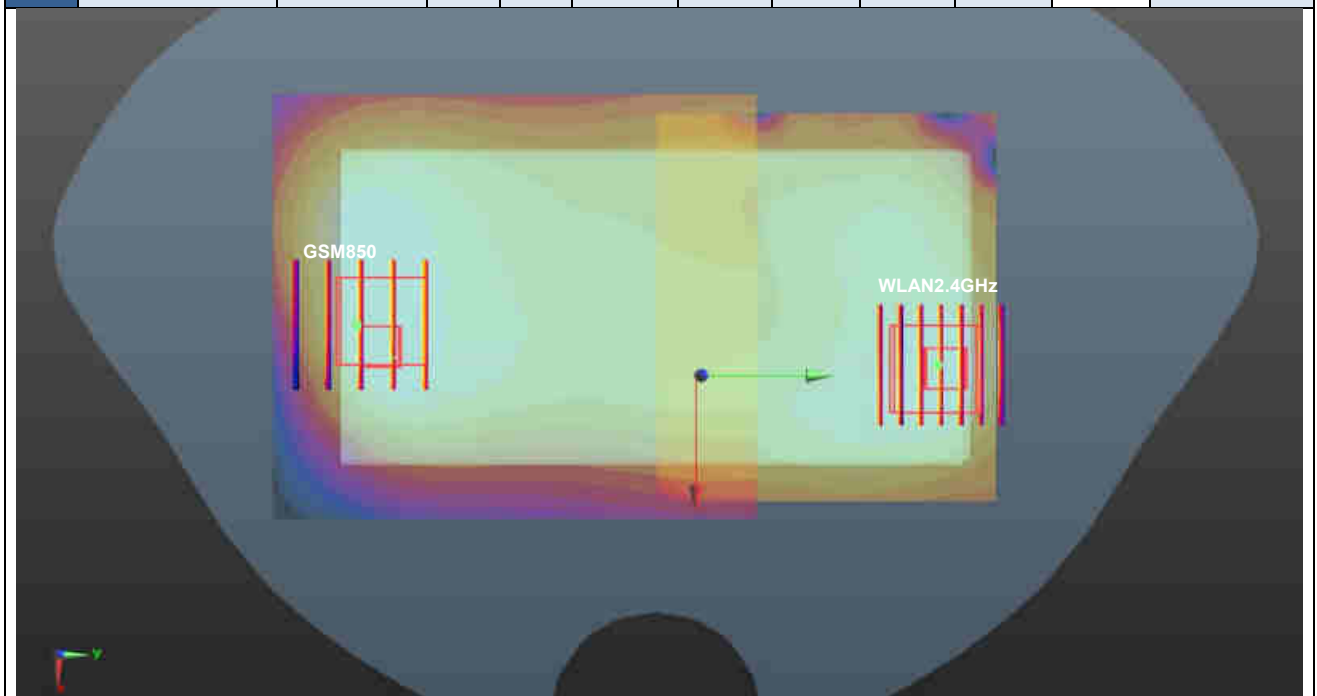
Remark: For Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.

16.5 SPLSR Evaluation and Analysis

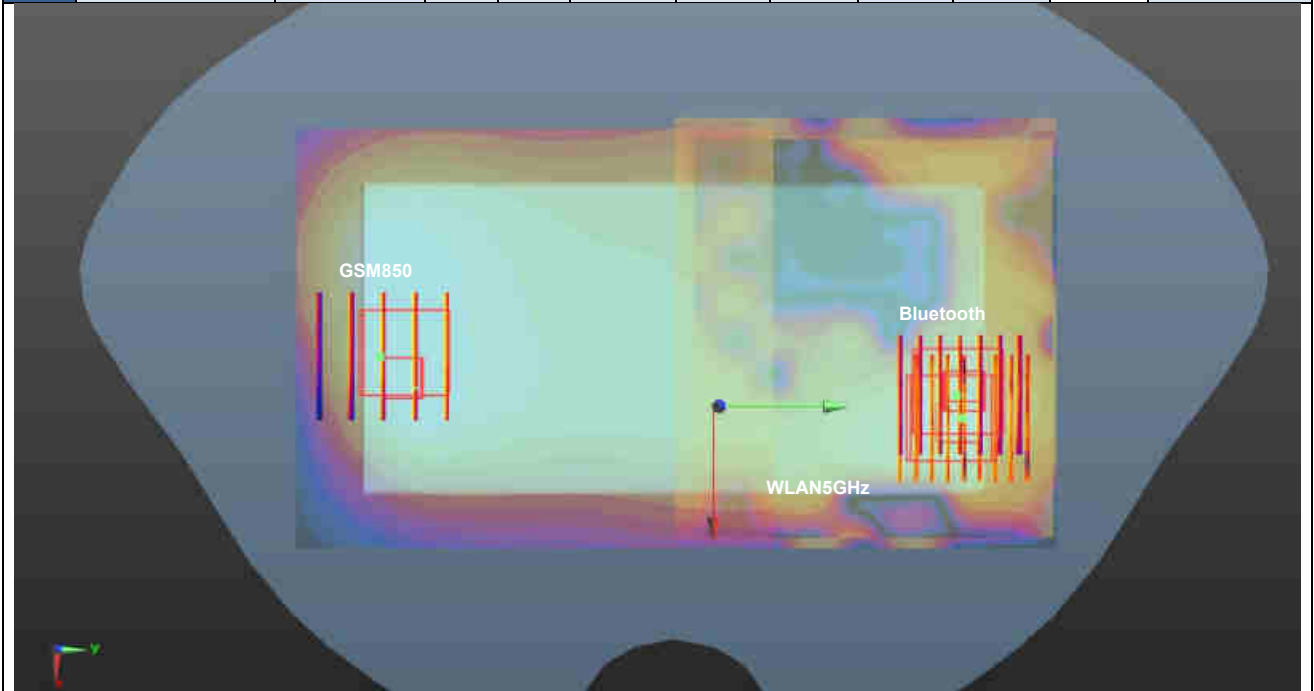
General Note:

1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of $[(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. $PLSR = (SAR_1 + SAR_2)1.5 / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$ for 1g SAR, simultaneously transmission SAR measurement is not necessary.
3. $SPLSR = (SAR_1 + SAR_2)1.5 / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.

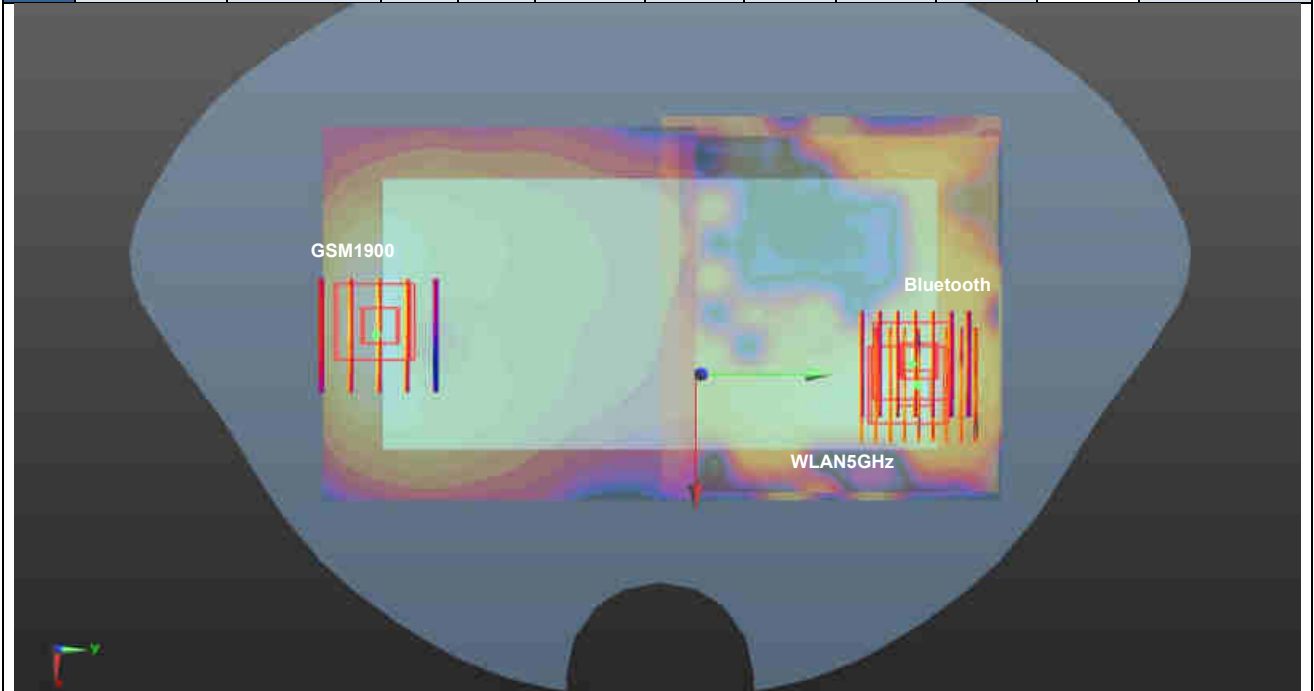
Case #1	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	1.306	5	10.9	-72.4	-1.65	145.0	1.63	0.01	Not required
	WLAN2.4GHz		0.319	5	13.4	72.6	-1.2				



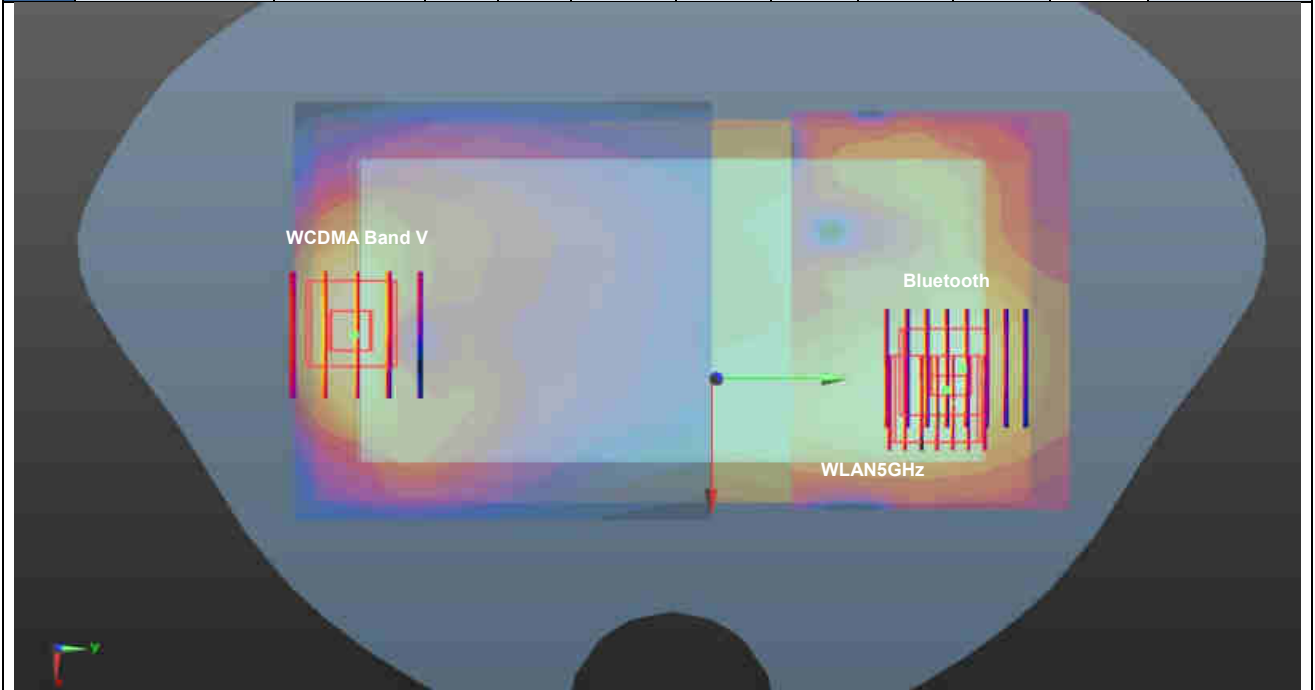
	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #2	GSM850	Back	1.306	5	10.9	-72.4	-1.65	144.7	2.13	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	GSM850	Back	1.306	5	10.9	-72.4	-1.65	146.2	2.13	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



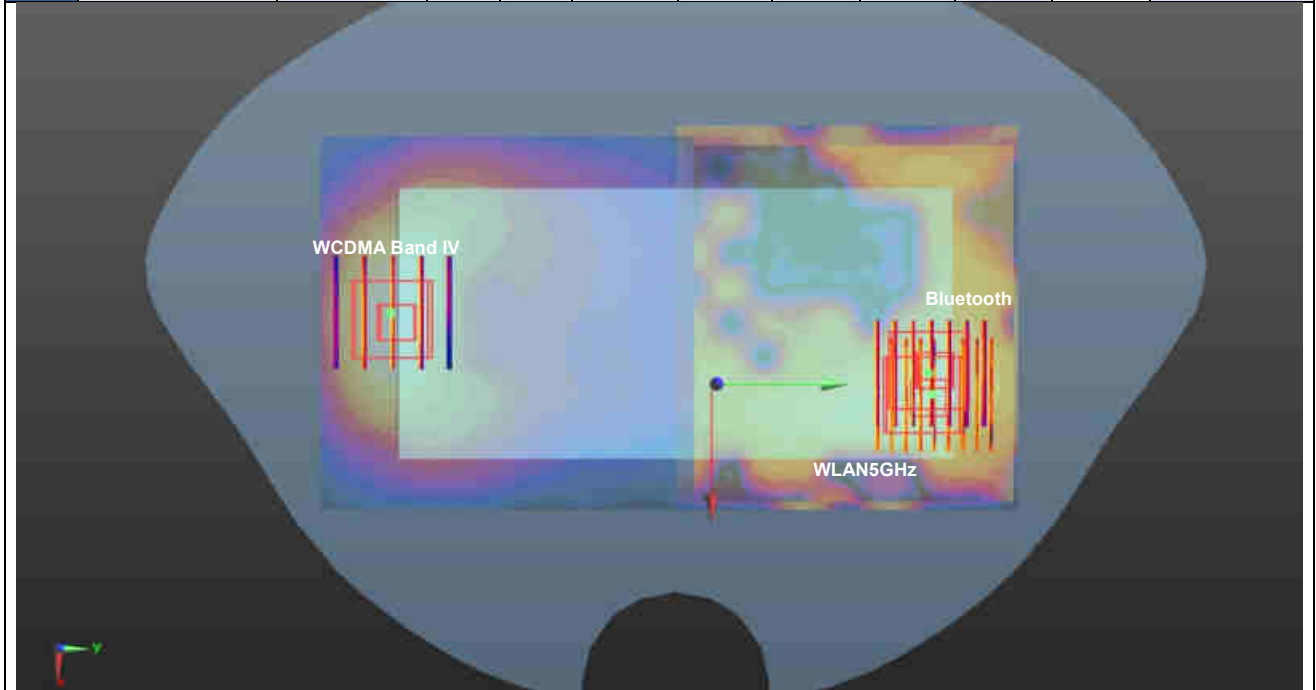
Case #3	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.175	5	2.8	-78.4	-1.02	151.5	2.00	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	GSM1900	Back	1.175	5	2.8	-78.4	-1.02	152.5	2.00	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



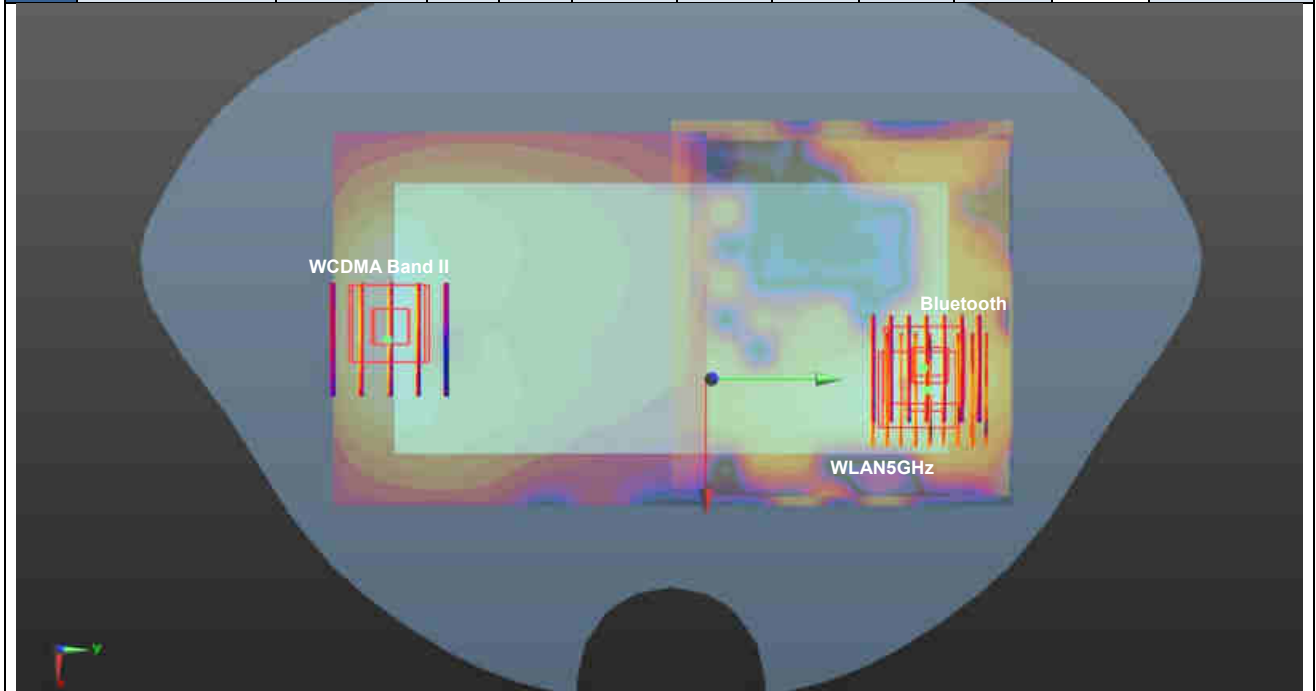
Case #4	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Back	1.183	5	10.8	-72.6	-1.64	144.9	2.01	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	WCDMA Band V	Back	1.183	5	10.8	-72.6	-1.64	146.4	2.01	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



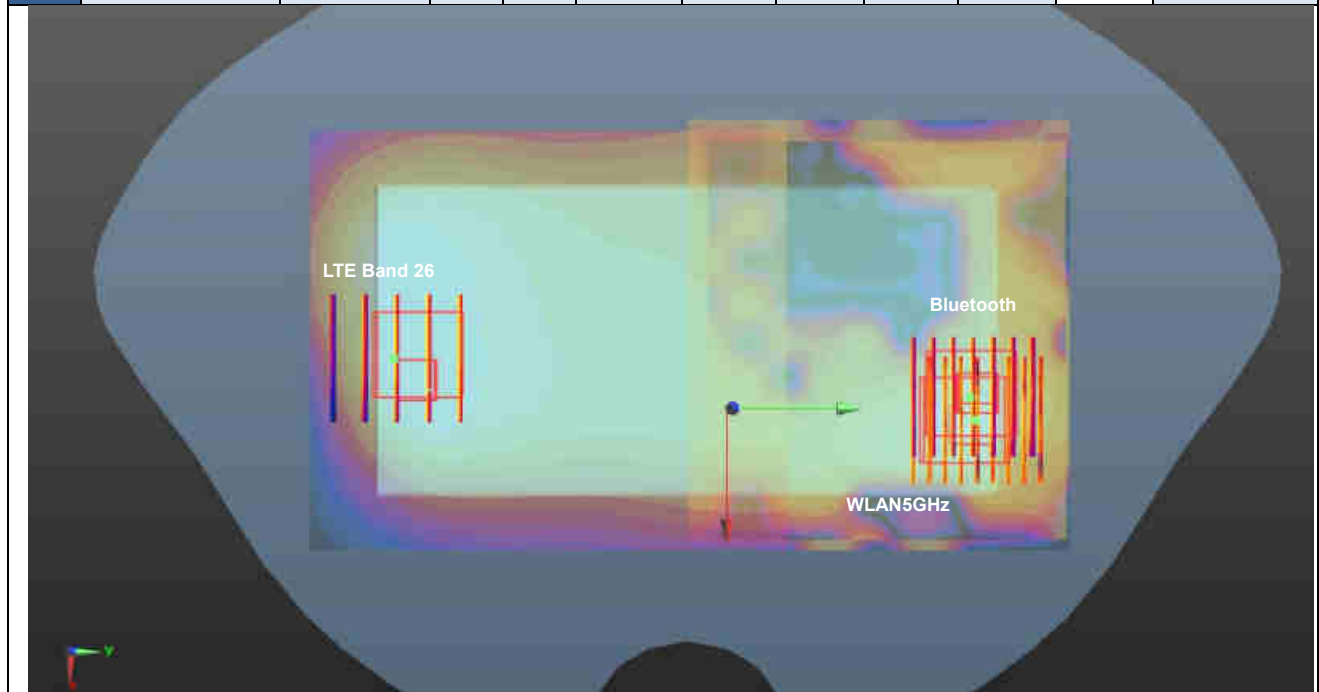
Case #5	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band IV	Back	1.090	5	1.8	-77.3	-1.06	150.5	1.92	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	WCDMA Band IV	Back	1.090	5	1.8	-77.3	-1.06	151.5	1.92	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



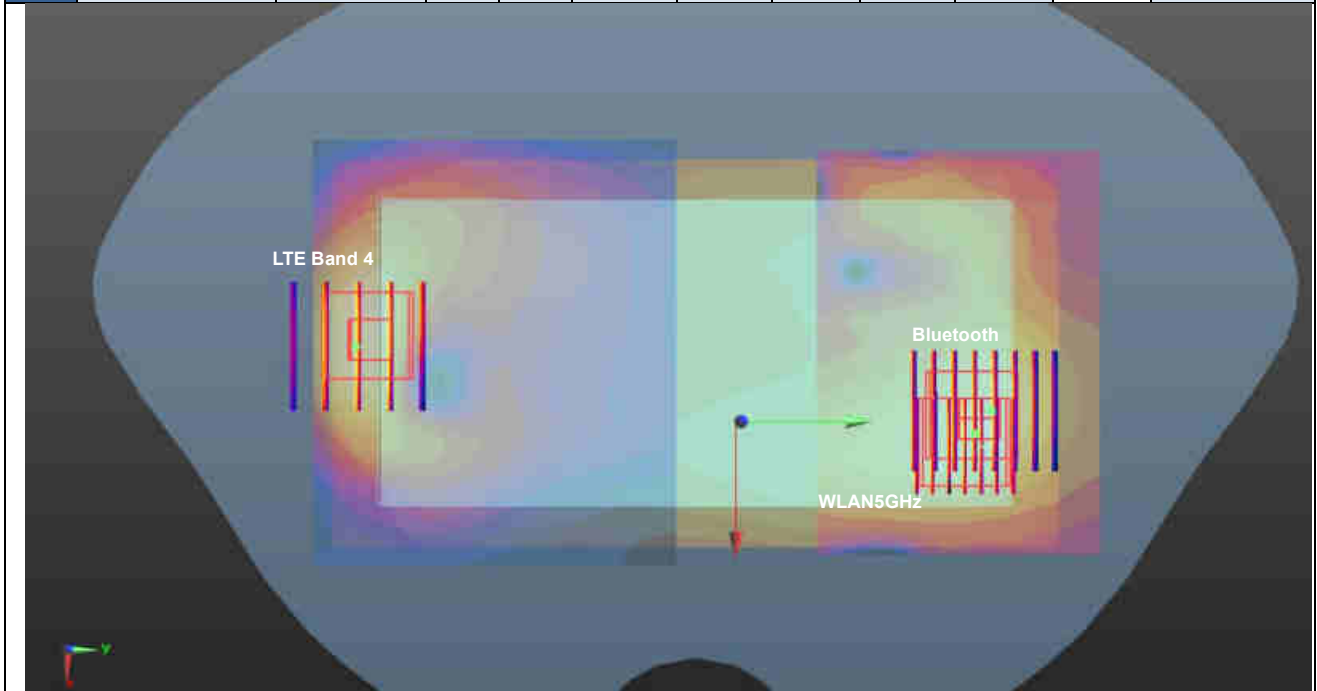
Case #6	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band II	Back	1.044	5	2.8	-78.4	-1.02	151.5	1.87	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	WCDMA Band II	Back	1.044	5	2.8	-78.4	-1.02	152.5	1.87	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



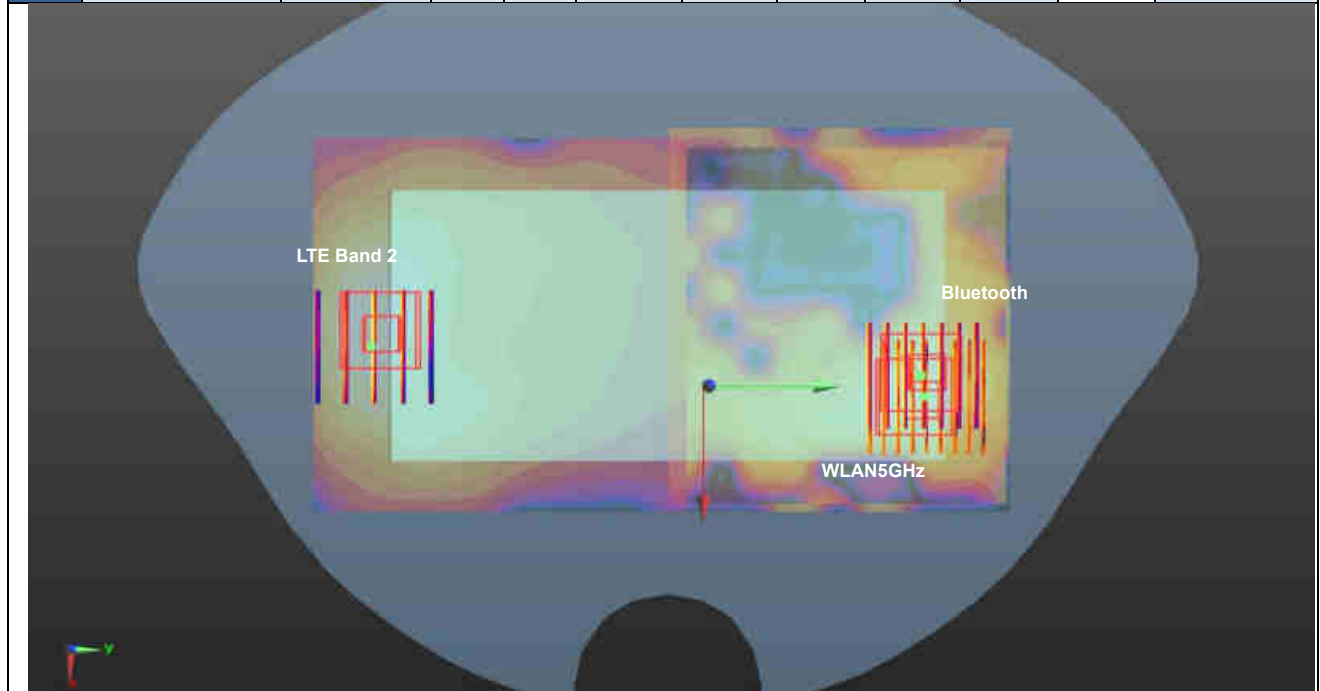
Case #7	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 26	Back	1.135	5	10.7	-72.5	-1.63	144.9	1.96	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	LTE Band 26	Back	1.135	5	10.7	-72.5	-1.63	146.3	1.96	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



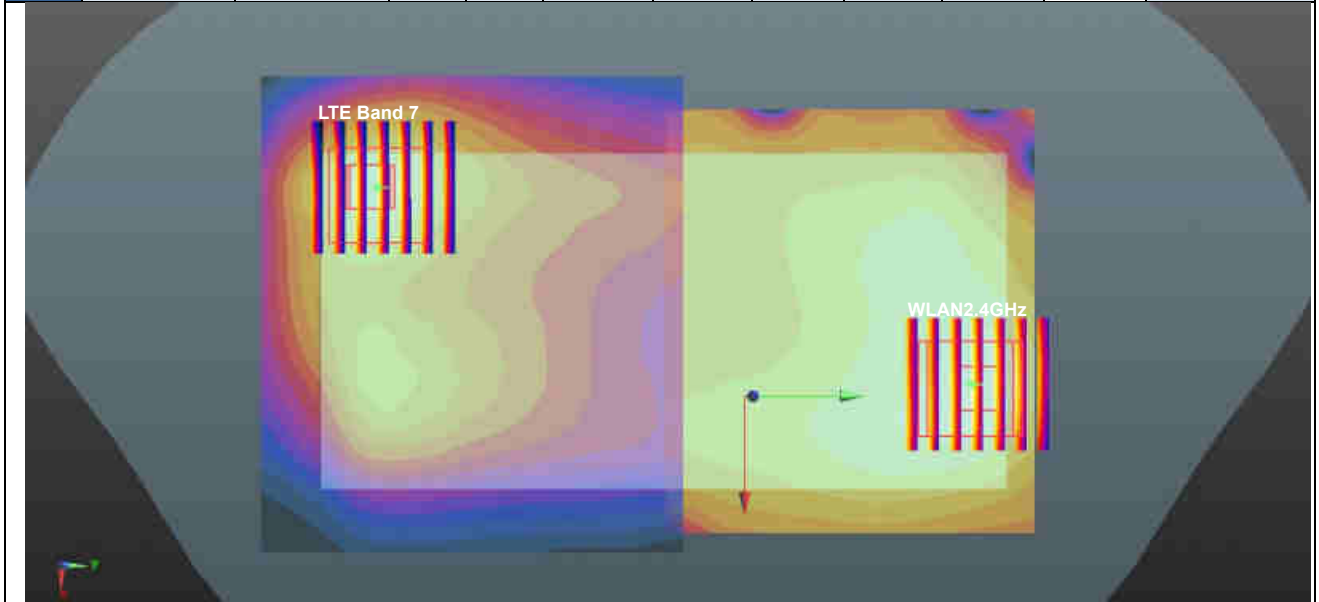
	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #8	LTE Band 4	Back	0.831	5	1.2	-79.9	-1.08	153.2	1.66	0.01	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	LTE Band 4	Back	0.831	5	1.2	-79.9	-1.08	154.2	1.66	0.01	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



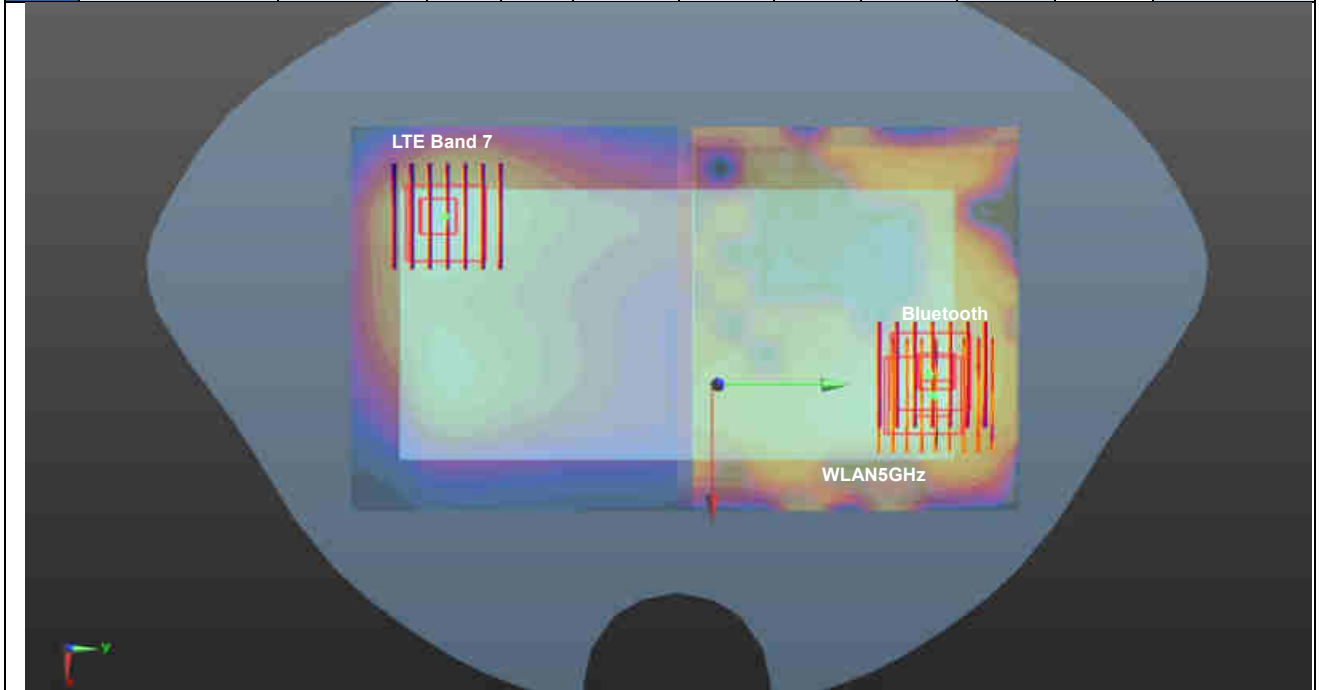
	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #9	LTE Band 2	Back	1.079	5	4.4	-78.7	-1.08	151.6	1.91	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	LTE Band 2	Back	1.079	5	4.4	-78.7	-1.08	152.7	1.91	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



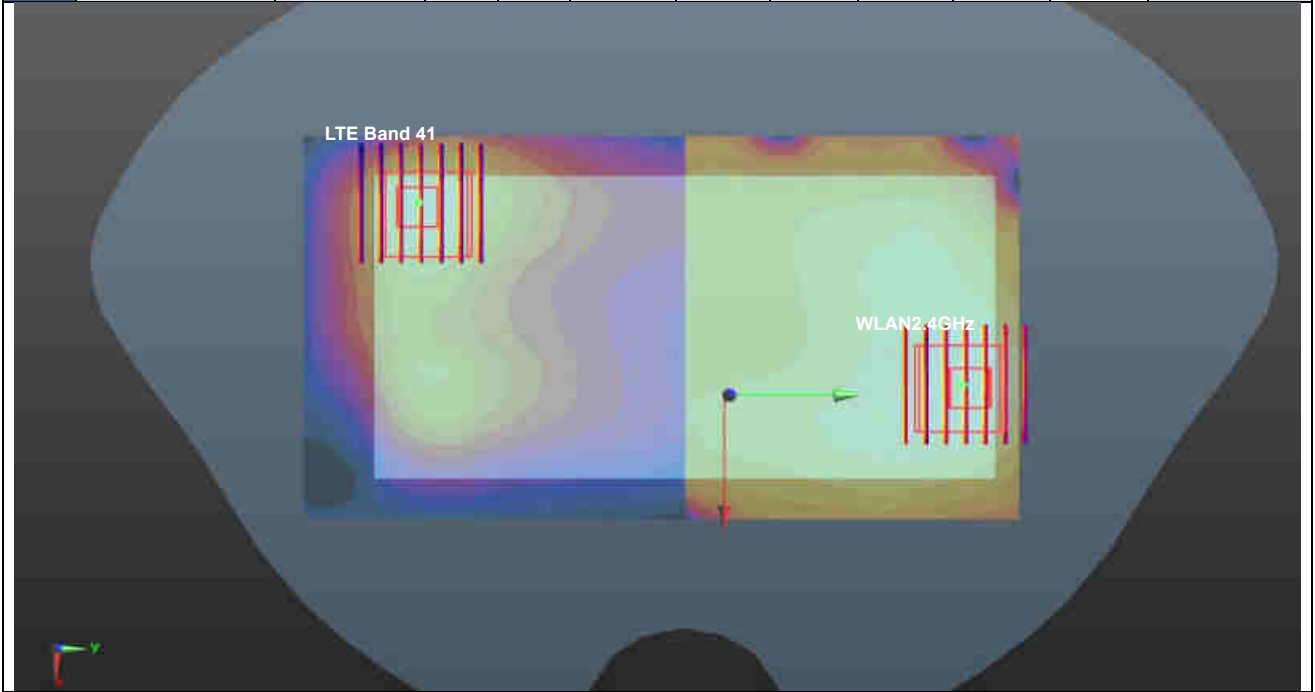
Case #10	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Back	1.391	5	-31.3	-68.6	-1.09	148.1	1.71	0.02	Not required
	WLAN2.4GHz		0.319	5	13.4	72.6	-1.2				



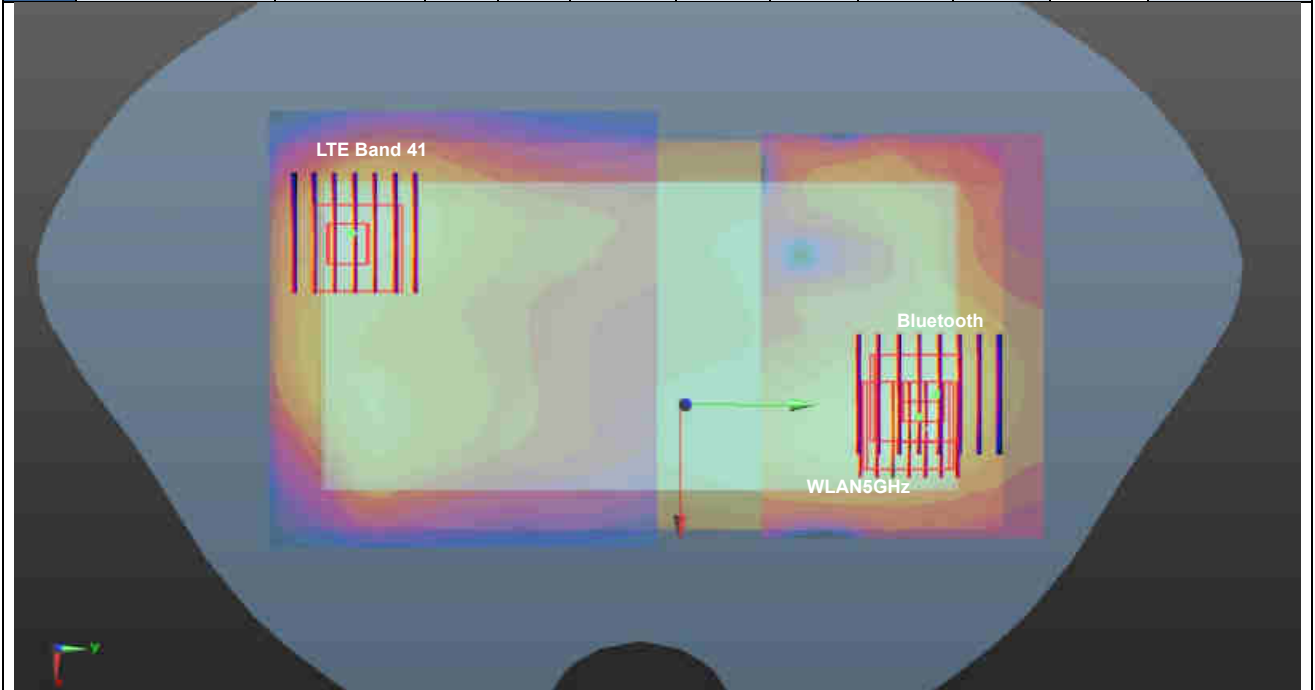
Case #11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #11	LTE Band 7	Back	1.391	5	-31.3	-68.6	-1.09	149.9	2.22	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	LTE Band 7	Back	1.391	5	-31.3	-68.6	-1.09	149.2	2.22	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



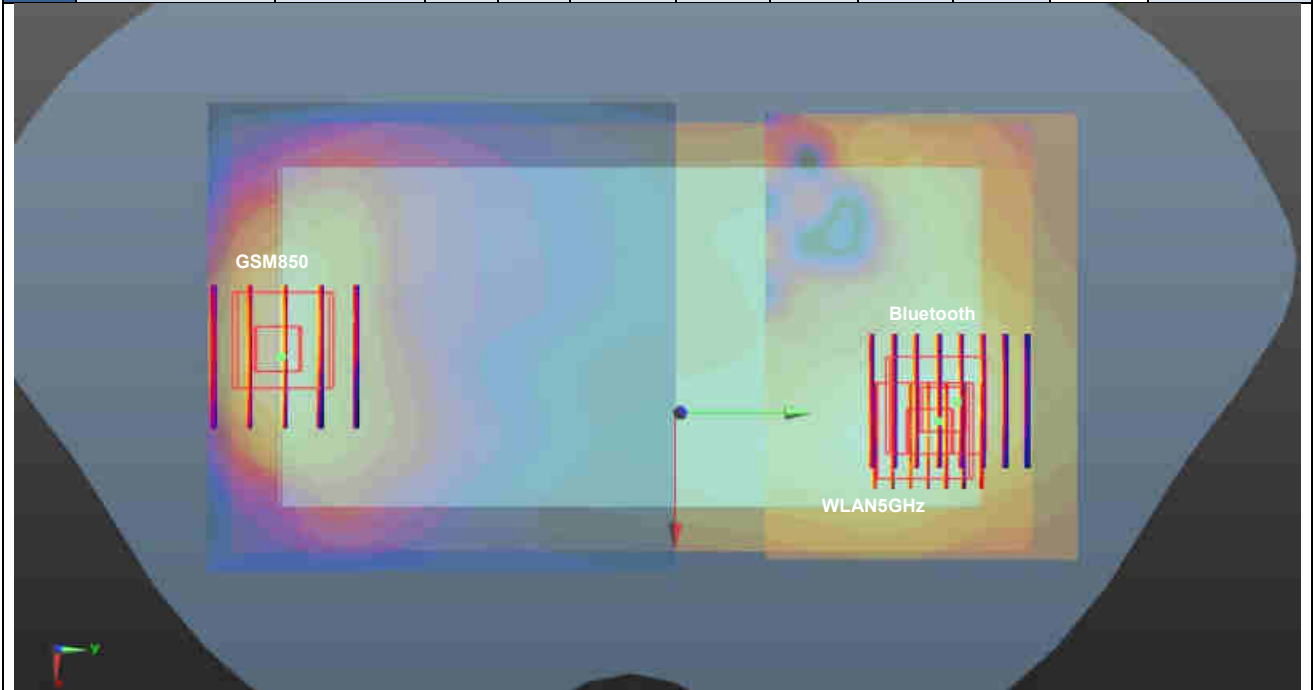
Case #12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 41	Back	1.334	5	-31.2	-68.2	-1.1	147.7	1.65	0.01	Not required
	WLAN2.4GHz		0.319	5	13.4	72.6	-1.2				



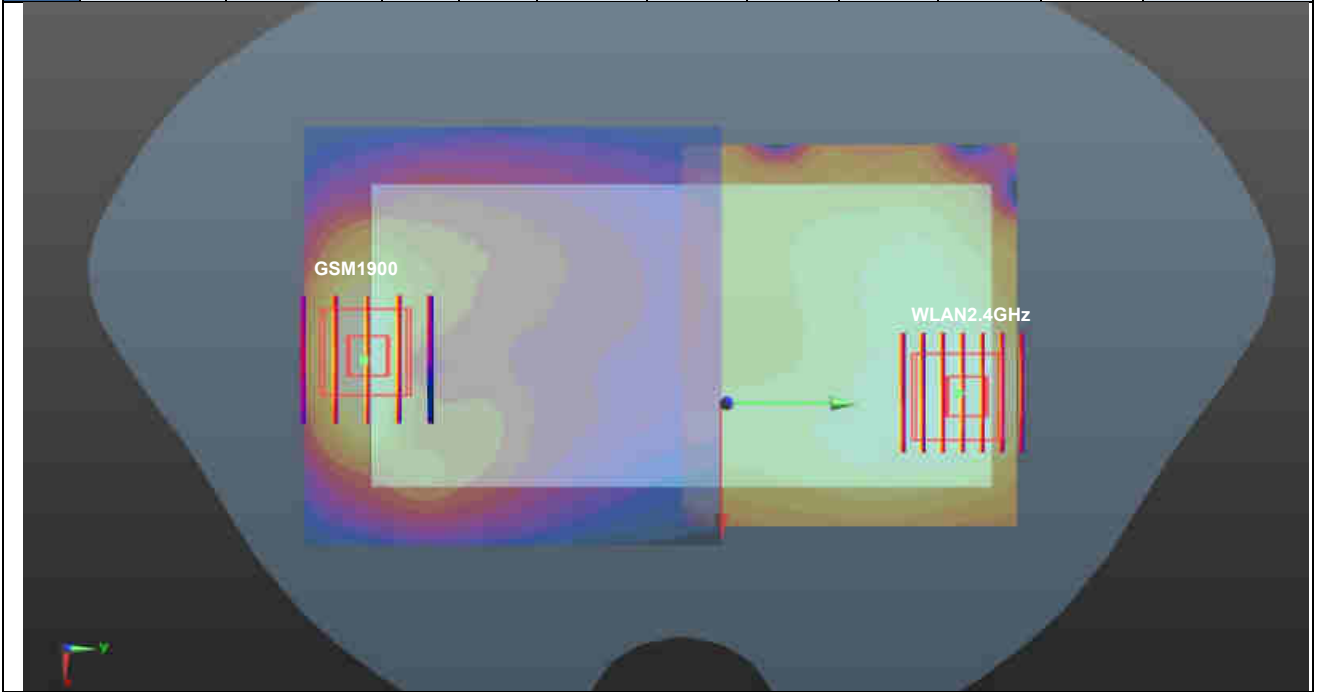
Case #13	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #13	LTE Band 41	Back	1.334	5	-31.2	-68.2	-1.1	149.5	2.16	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	LTE Band 41	Back	1.334	5	-31.2	-68.2	-1.1	148.7	2.16	0.02	Not required
	WLAN5GHz		0.695	5	20.8	72	-1.16				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



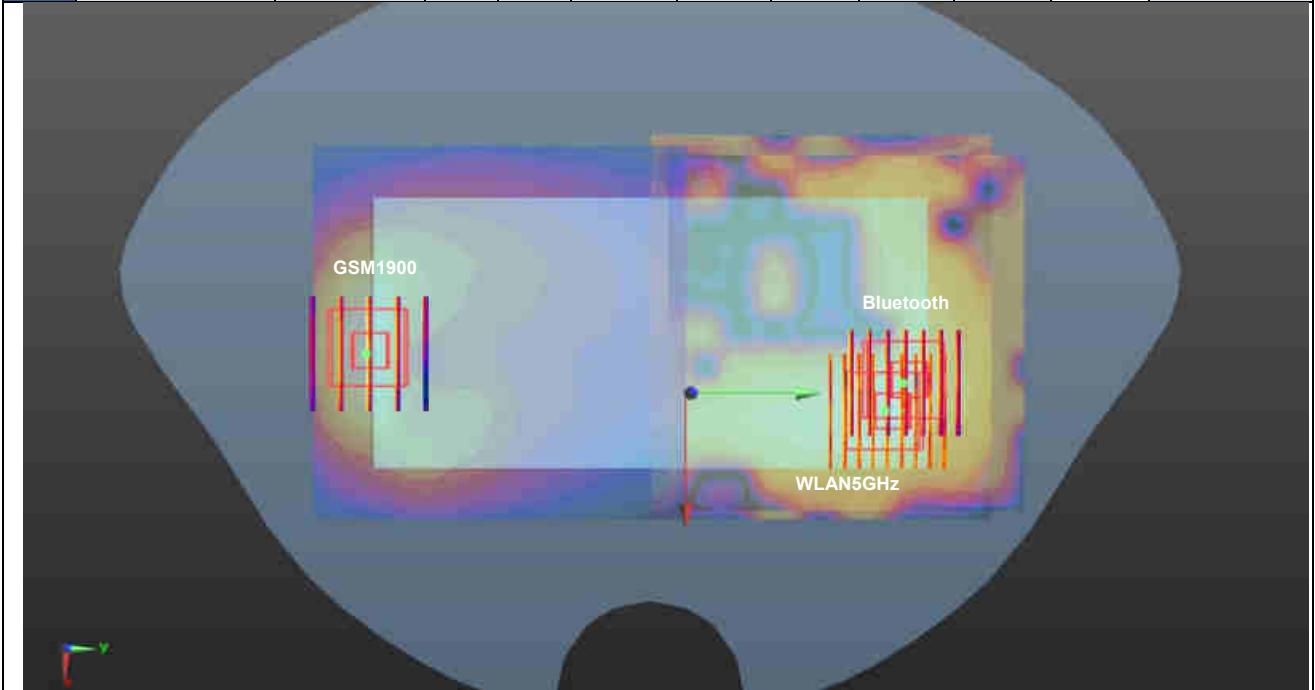
Case #14	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM850	Back	1.306	5	10.9	-72.4	-1.65	141.2	2.28	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	GSM850	Back	1.306	5	10.9	-72.4	-1.65	146.2	2.28	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



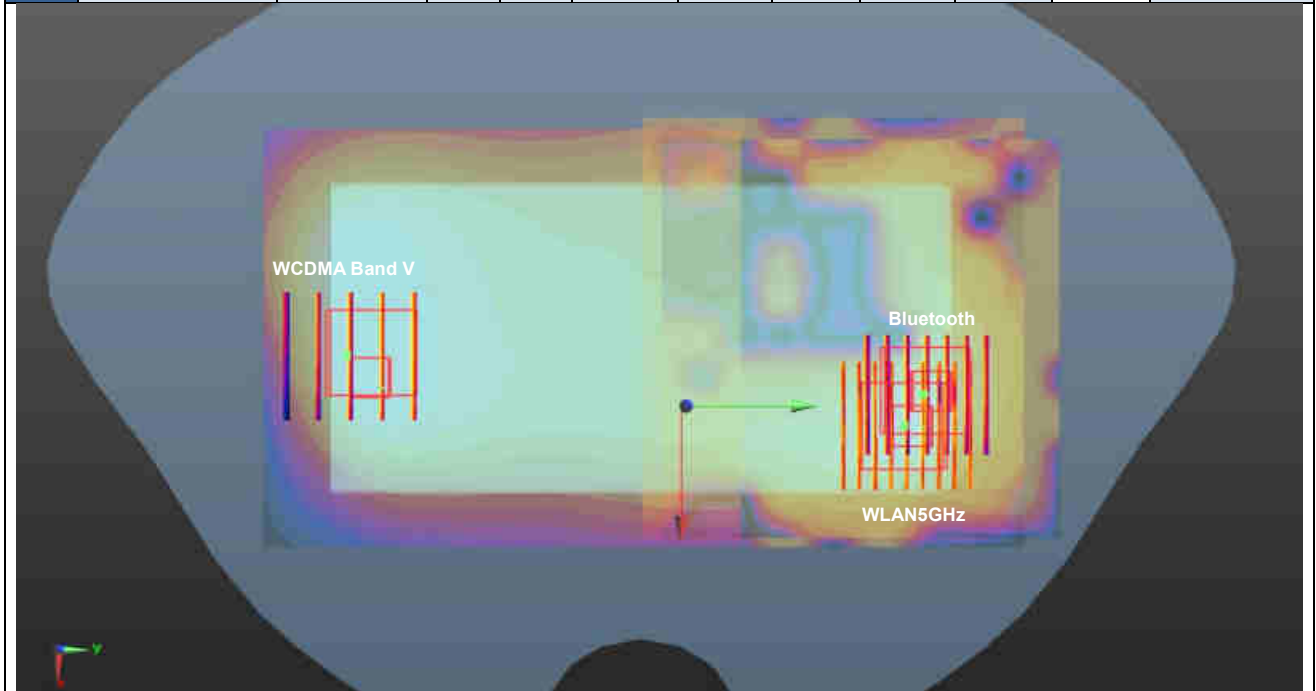
Case #15	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	GSM1900	Back	1.431	5	4.4	-80	-1.09	152.9	1.75	0.02	Not required
	WLAN2.4GHz		0.319	5	13.4	72.6	-1.2				



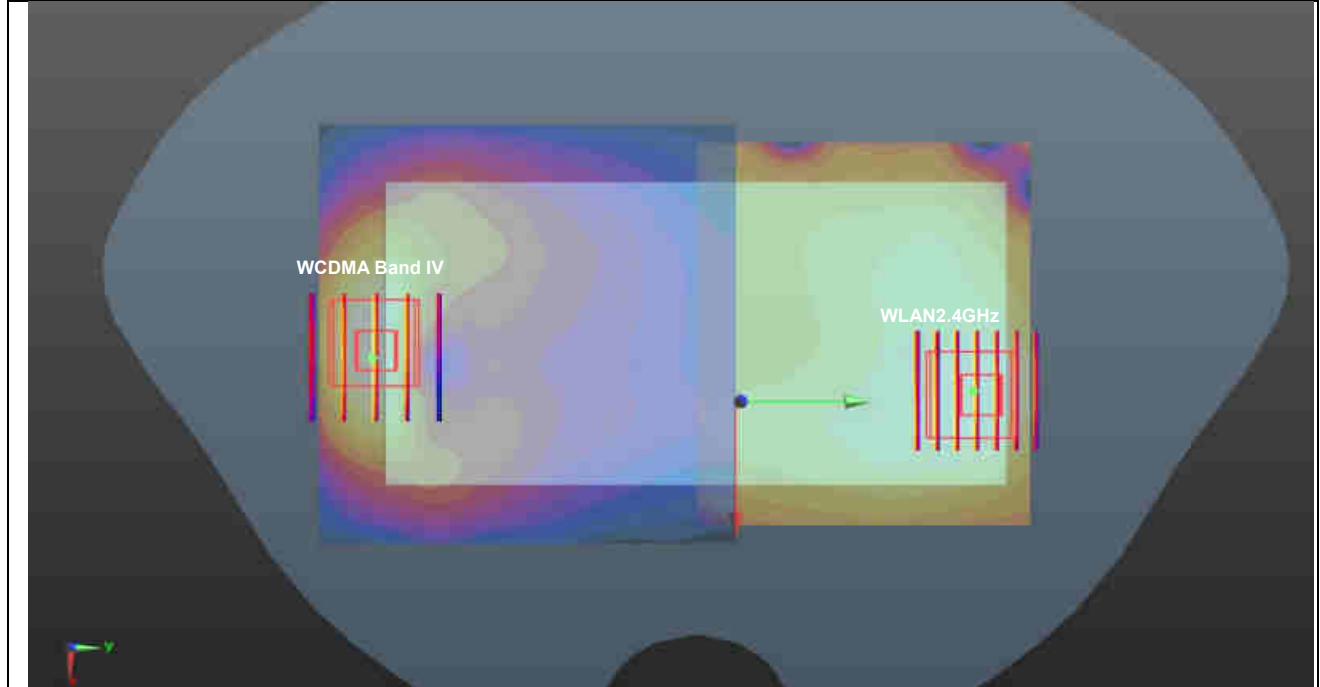
Case #16	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #16	GSM1900	Back	1.431	5	4.4	-80	-1.09	149.4	2.40	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	GSM1900	Back	1.431	5	4.4	-80	-1.09	154.0	2.40	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



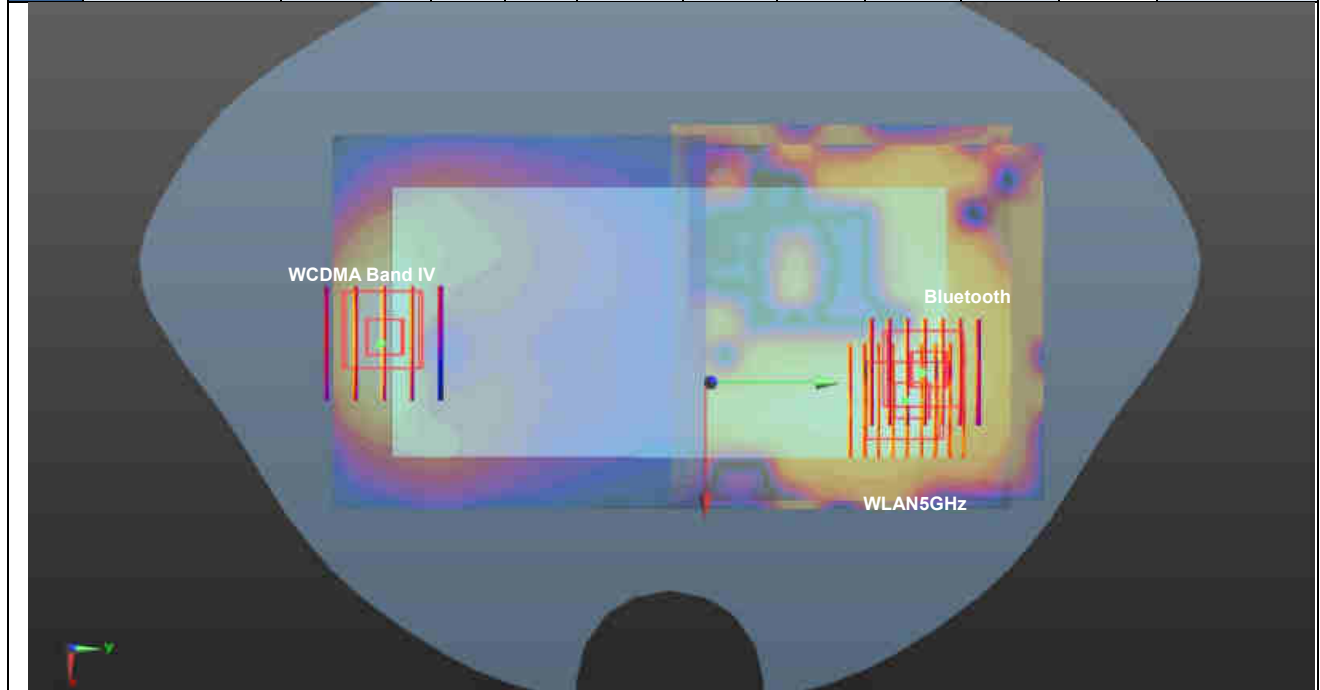
Case #17	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band V	Back	1.183	5	10.8	-72.6	-1.64	141.4	2.16	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	WCDMA Band V	Back	1.183	5	10.8	-72.6	-1.64	146.4	2.16	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



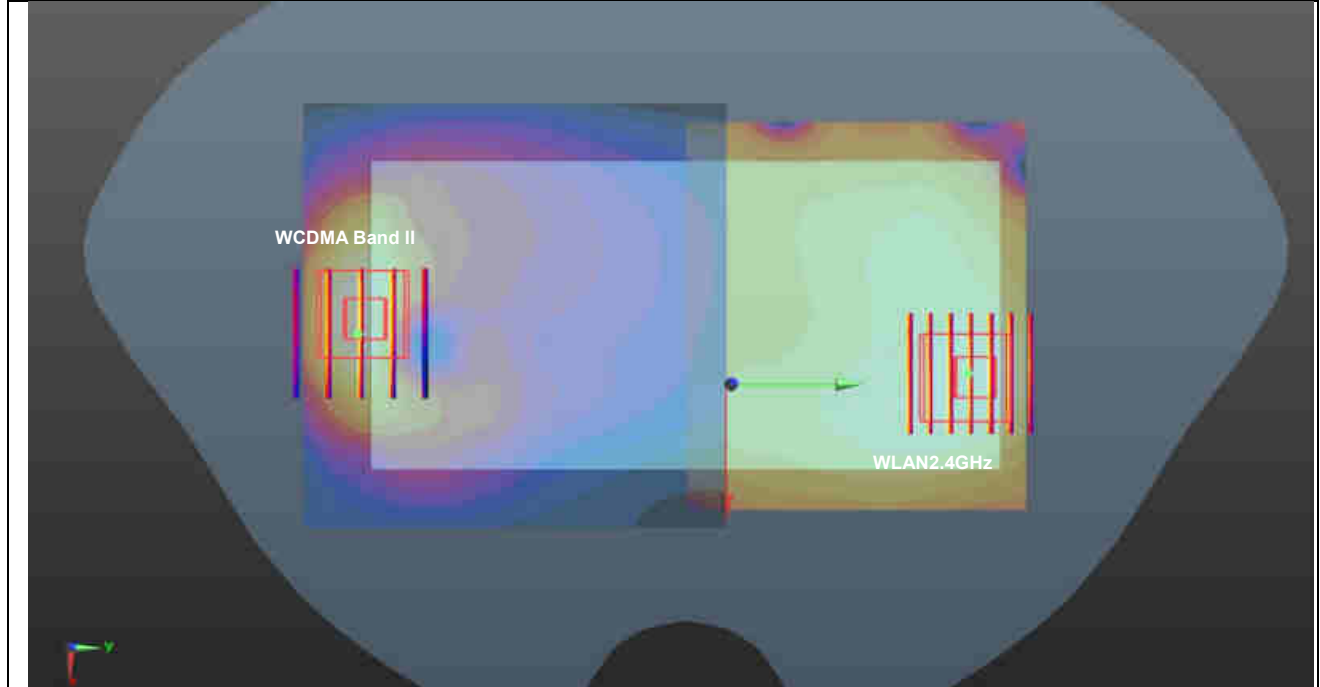
Case #18	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band IV	Back	1.404	5	4.4	-79.9	-1.07	152.8	1.72	0.01	Not required
	WLAN2.4GHz		0.319	5	13.4	72.6	-1.2				



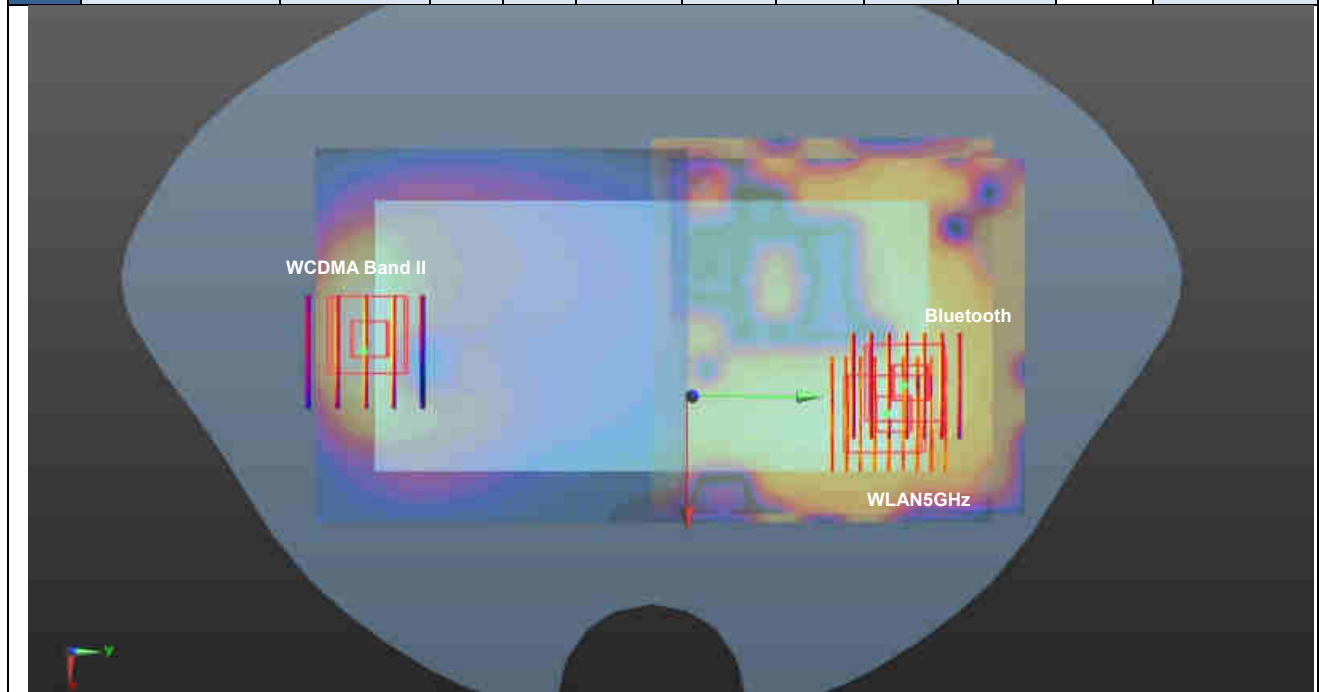
Case #19	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #19	WCDMA Band IV	Back	1.404	5	4.4	-79.9	-1.07	149.3	2.38	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	WCDMA Band IV	Back	1.404	5	4.4	-79.9	-1.07	153.9	2.38	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



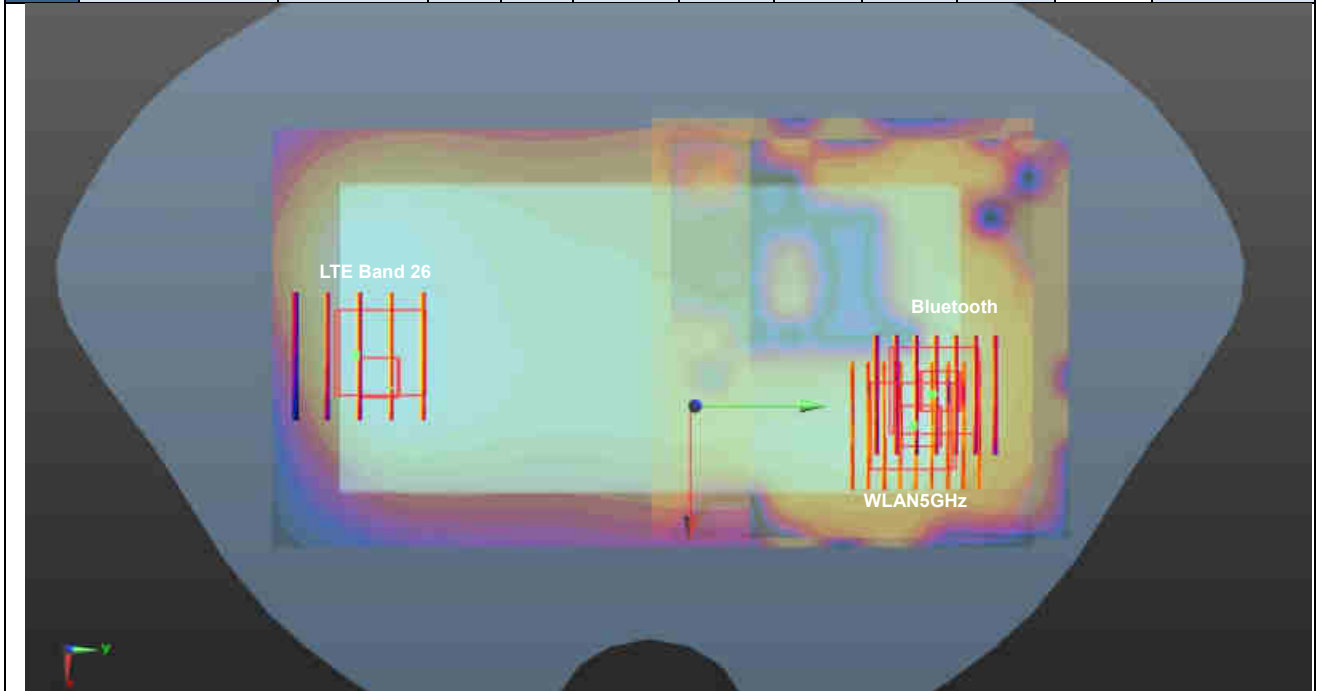
Case #20	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	WCDMA Band II	Back	1.426	5	2.9	-78.3	-1.17	151.3	1.75	0.02	Not required
	WLAN2.4GHz		0.319	5	13.4	72.6	-1.2				



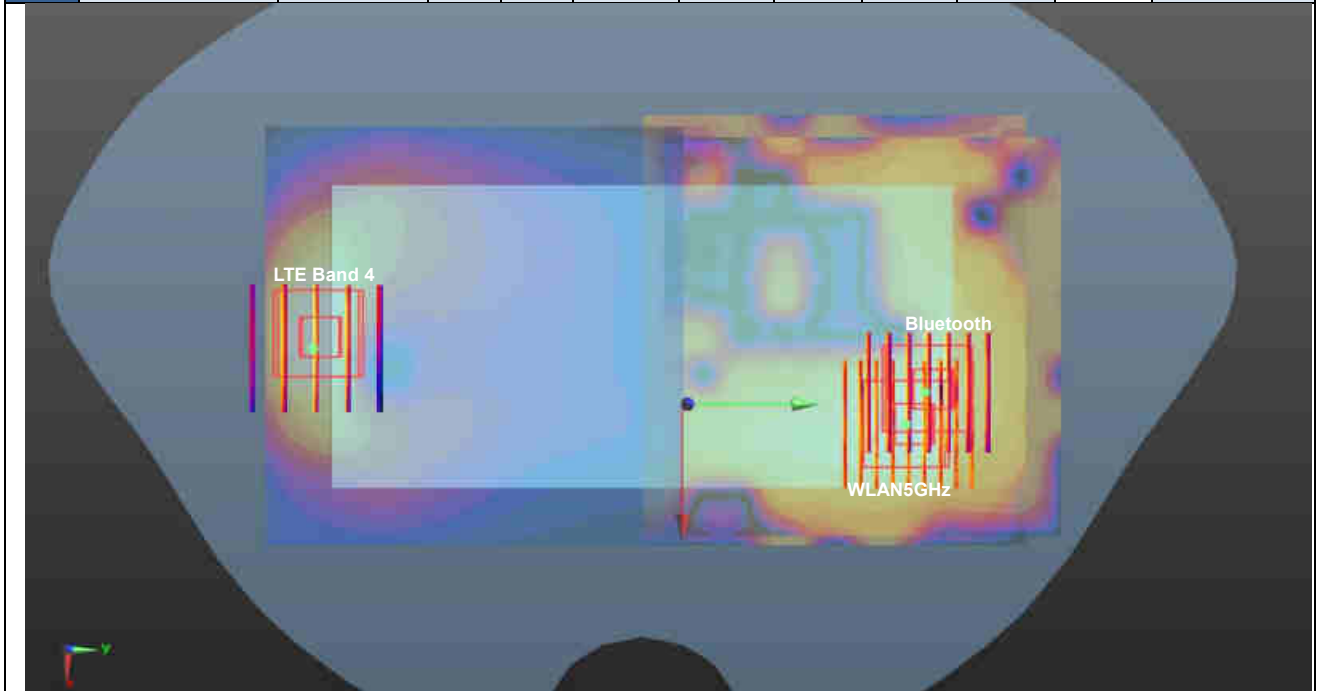
	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case #21	WCDMA Band II	Back	1.426	5	2.9	-78.3	-1.17	147.9	2.40	0.03	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	WCDMA Band II	Back	1.426	5	2.9	-78.3	-1.17	152.4	2.40	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



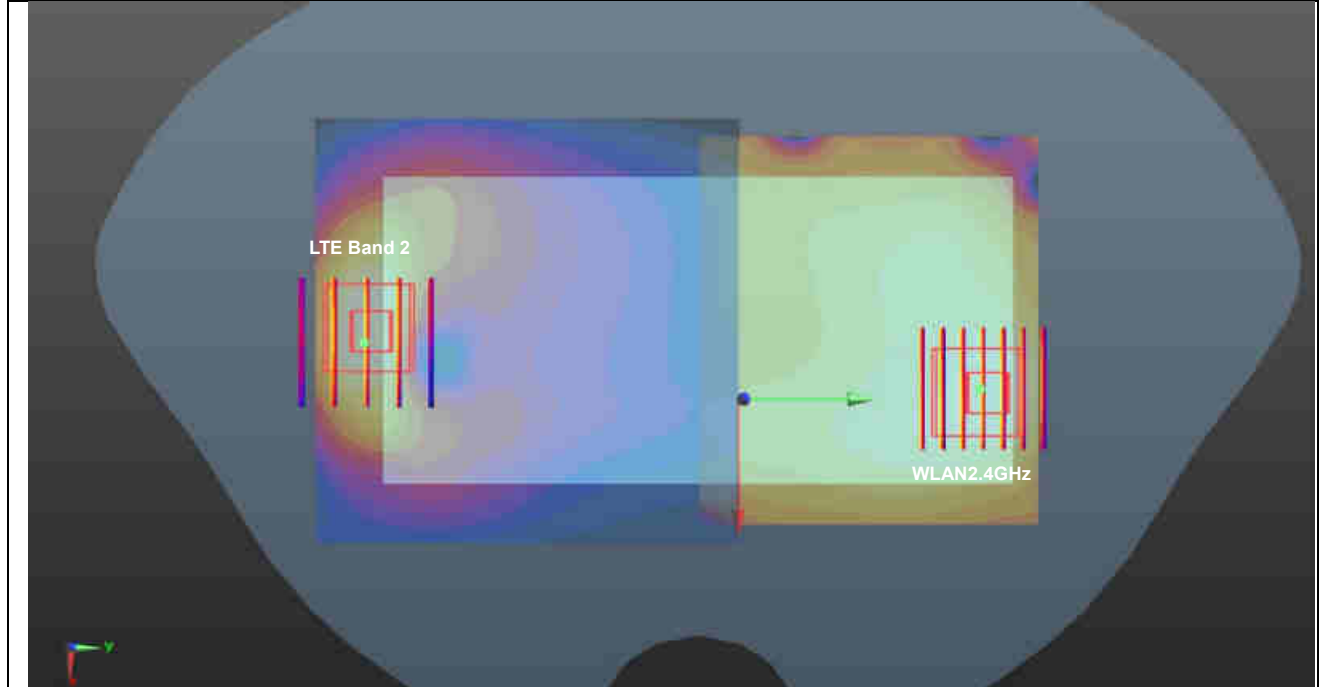
Case #22	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 26	Back	1.135	5	10.7	-72.5	-1.63	141.4	2.11	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	LTE Band 26	Back	1.135	5	10.7	-72.5	-1.63	146.3	2.11	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



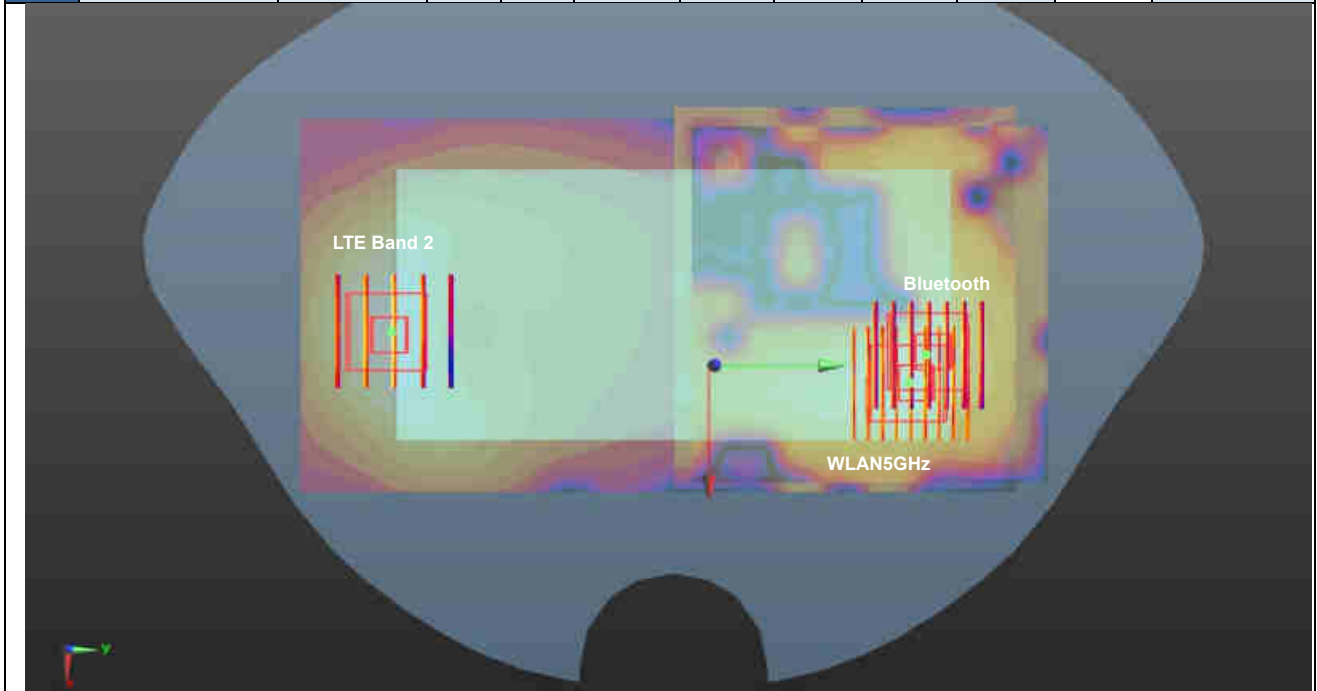
Case #23	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 4	Back	1.158	5	1.4	-79.8	-1.19	149.6	2.13	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	LTE Band 4	Back	1.158	5	1.4	-79.8	-1.19	154.0	2.13	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



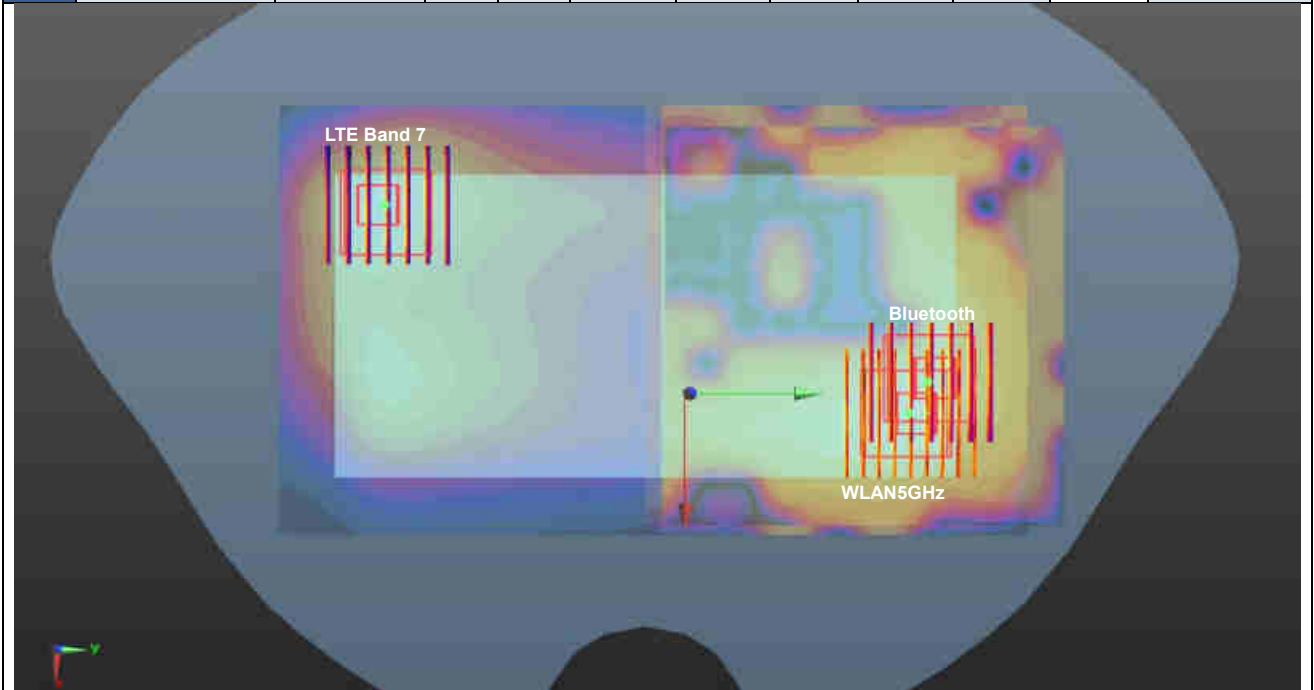
Case #24	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 2	Back	1.440	5	7.5	-81.1	-1.09	153.8	1.76	0.02	Not required
	WLAN2.4GHz		0.319	5	13.4	72.6	-1.2				



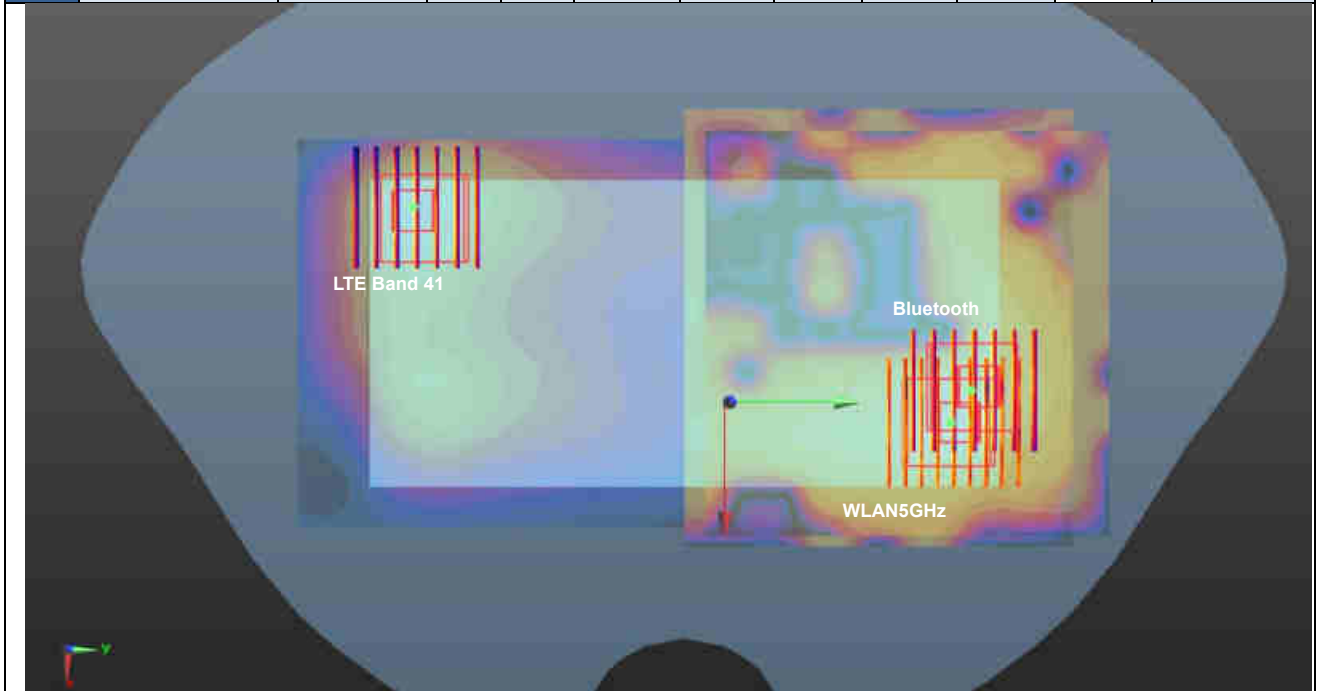
Case #25	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 2	Back	1.440	5	7.5	-81.1	-1.09	150.2	2.41	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.84	5	22	68.4	-1.18				
	LTE Band 2	Back	1.440	5	7.5	-81.1	-1.09	155.0	2.41	0.02	Not required
	WLAN5GHz		0.84	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



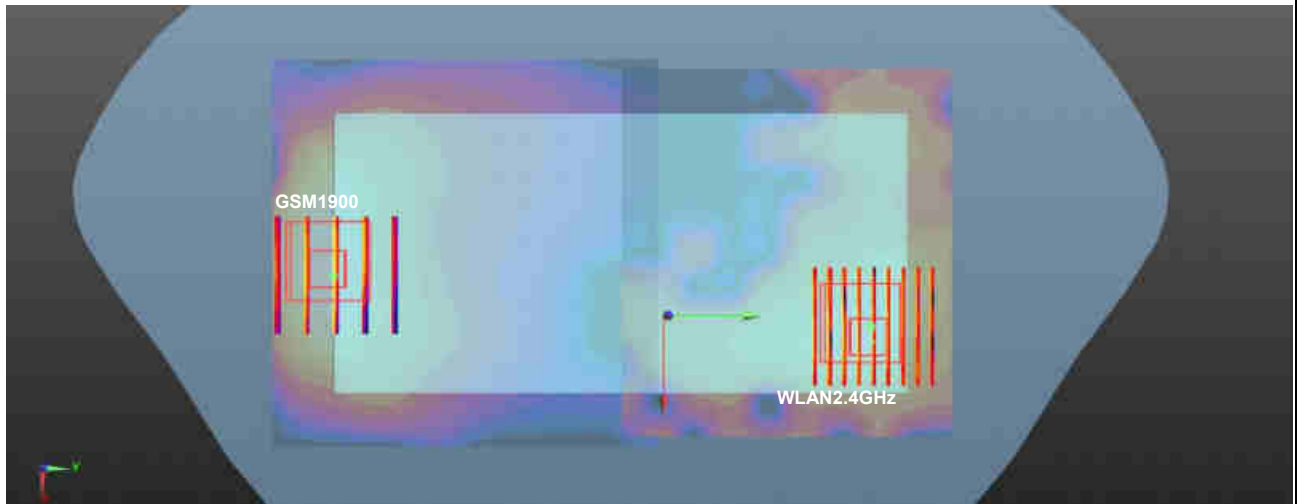
Case #26	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
	LTE Band 7	Back	1.391	5	-31.3	-68.6	-1.09	147.0	2.36	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	LTE Band 7	Back	1.391	5	-31.3	-68.6	-1.09	149.2	2.36	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



Case #27	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				
	LTE Band 41	Back	1.334	5	-31.2	-68.2	-1.1	146.6	2.31	0.02	Not required
	Bluetooth		0.133	5	13.1	73.8	-1.2				
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	LTE Band 41	Back	1.334	5	-31.2	-68.2	-1.1	148.7	2.31	0.02	Not required
	WLAN5GHz		0.840	5	22	68.4	-1.18				
	Bluetooth		0.133	5	13.1	73.8	-1.2				



Case #28	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				
	GSM1900	Back	3.510	0	6	-80.1	-0.92	149.8	4.00	0.05	Not required
	WLAN5GHz		0.494	0	22.4	68.8	-1.01				





17. Supplemental Tuner Tests Results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent 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. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 96 tuner states are 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. The bands which are dynamically tuned are split into two separate antennas, so each antenna system will have its own test plan to cover the corresponding 96 tuner states.
3. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

17.1 Supplemental Tuner Head & Body SAR Results

Please refer to Appendix C.

Test Engineer: Nick Hu



18. 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.

19. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [6] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.
- [7] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [8] FCC KDB 648474 D04 v01r03, "SAR Evaluation Considerations for Wireless Handsets", Oct 2015.
- [9] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [10] FCC KDB 616217 D04 v01r02, "SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers", Oct 2015
- [11] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [12] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [13] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.



Appendix A. Plots of System Performance Check

The plots are shown as follows.



Appendix B. Plots of High SAR Measurement

The plots are shown as follows.



Appendix C. Supplemental Tuner Head & Body SAR Results

The results are shown as follows.



Appendix D. DASY Calibration Certificate

The DASY calibration certificates are shown as follows.