

Appendix E: Simultaneous Transmission Analysis

E.1. Introduction

According to FCC KDB Publication 447498 D04v01, transmitters are considered to be operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

Table E-1 - Supported Simultaneous Transmission Scenarios

#	Scenario	Head	Body-worn	Hotspot	Phablet
1	WWAN + 2.4 GHz WIFI_SISO	Yes	Yes	Yes	Yes
2	WWAN + 2.4 GHz WIFI_MIMO	Yes	Yes	Yes	Yes
3	WWAN + 5 GHz WIFI_SISO	Yes	Yes	Yes	Yes
4	WWAN + 5 GHz WIFI_MIMO	Yes	Yes	Yes	Yes
5	WWAN + 6 GHz WIFI_SISO	Yes	Yes	Yes	Yes
6	WWAN + 6 GHz WIFI_MIMO	Yes	Yes	Yes	Yes
7	WWAN + 2.4 GHz Bluetooth_SISO	Yes	Yes	Yes	Yes
8	WWAN + 2.4 GHz Bluetooth_MIMO	Yes	Yes	N/A	Yes
9	WWAN + 2.4 GHz WIFI_SISO + 5 GHz WIFI_SISO	Yes	Yes	Yes	Yes
10	WWAN + 2.4 GHz WIFI_SISO + 6 GHz WIFI_SISO	Yes	Yes	Yes	Yes
11	WWAN + 2.4 GHz WIFI_SISO + 5 GHz WIFI_MIMO	Yes	Yes	Yes	Yes
12	WWAN + 2.4 GHz WIFI_SISO + 6 GHz WIFI_MIMO	Yes	Yes	Yes	Yes
13	WWAN + 2.4 GHz WIFI_MIMO + 5 GHz WIFI_SISO	Yes	Yes	Yes	Yes
14	WWAN + 2.4 GHz WIFI_MIMO + 6 GHz WIFI_SISO	Yes	Yes	Yes	Yes
15	WWAN + 5 GHz WIFI_SISO + 2.4 GHz Bluetooth_SISO	Yes	Yes	Yes	Yes
16	WWAN + 6 GHz WIFI_SISO + 2.4 GHz Bluetooth_SISO	Yes	Yes	Yes	Yes
17	WWAN + 5 GHz WIFI_SISO + 2.4 GHz Bluetooth_MIMO	Yes	Yes	N/A	Yes
18	WWAN + 6 GHz WIFI_SISO + 2.4 GHz Bluetooth_MIMO	Yes	Yes	N/A	Yes
19	WWAN + 2.4 GHz WIFI_H + 2.4 GHz Bluetooth_F	Yes	Yes	Yes	Yes
20	WWAN + 2.4 GHz WIFI_F + 2.4 GHz Bluetooth_H	Yes	Yes	Yes	Yes
21	WWAN + 5 GHz WIFI_MIMO + 2.4 GHz Bluetooth_SISO	Yes	Yes	Yes	Yes
22	WWAN + 6 GHz WIFI_MIMO + 2.4 GHz Bluetooth_SISO	Yes	Yes	Yes	Yes
23	WWAN + 5 GHz WIFI_MIMO + 2.4 GHz Bluetooth_MIMO	Yes	Yes	N/A	Yes
24	WWAN + 6 GHz WIFI_MIMO + 2.4 GHz Bluetooth_MIMO	Yes	Yes	N/A	Yes
25	WWAN + 5 GHz WIFI_SISO + 2.4 GHz WIFI_H + 2.4 GHz Bluetooth_F	Yes	Yes	Yes	Yes
26	WWAN + 5 GHz WIFI_SISO + 2.4 GHz WIFI_F + 2.4 GHz Bluetooth_H	Yes	Yes	Yes	Yes
27	WWAN + 6 GHz WIFI_SISO + 2.4 GHz WIFI_H + 2.4 GHz Bluetooth_F	Yes	Yes	Yes	Yes
28	WWAN + 6 GHz WIFI_SISO + 2.4 GHz WIFI_F + 2.4 GHz Bluetooth_H	Yes	Yes	Yes	Yes
29	WWAN + 2.4 GHz WIFI_MIMO + 5 GHz WIFI_MIMO	Yes	Yes	Yes	Yes
30	WWAN + 2.4 GHz WIFI_MIMO + 6 GHz WIFI_MIMO	Yes	Yes	Yes	Yes
31	WWAN + 5 GHz WIFI_MIMO + 2.4 GHz WIFI_H + 2.4 GHz Bluetooth_F	Yes	Yes	Yes	Yes
32	WWAN + 5 GHz WIFI_MIMO + 2.4 GHz WIFI_F + 2.4 GHz Bluetooth_H	Yes	Yes	Yes	Yes
33	WWAN + 6 GHz WIFI_MIMO + 2.4 GHz WIFI_H + 2.4 GHz Bluetooth_F	Yes	Yes	Yes	Yes
34	WWAN + 6 GHz WIFI_MIMO + 2.4 GHz WIFI_F + 2.4 GHz Bluetooth_H	Yes	Yes	Yes	Yes

Note:

- Bluetooth tethering is supported on either Ant H or Ant F.
- NFC/UWB can simultaneously transmit with all the above combinations and was evaluated for phablet based on usage conditions

E.2. Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D04v01 and IEEE 1528-2013 Section 6.3.4.1.2, simultaneous transmission SAR test exclusion may be applied when the sum of SAR for all the simultaneous transmitting antennas in a specific physical test configuration is ≤ 1.6 W/kg for 1g and 4 W/kg for 10g. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

Per FCC KDB Publication 941225 D06v02r01, the devices edges with antennas more than 2.5 cm from edge are not required to be evaluated for SAR ("").

This device is enabled with Qualcomm® Smart Transmit Gen2 with pre-defined sub6 antenna groups (AG0, AG1).

Simultaneous transmission analysis is performed per antenna group. Below analysis demonstrates the mutually exclusive operation of AG0 and AG1 and the compliance between each antenna group with non-Smart Transmit Radios. For this model, WWAN/WLAN/BT Radios are managed under Smart Transmit. Non-Smart Transmit Radios include NFC/UWB.

When operating in the same antenna group, simultaneous transmission compliance between radio operations within an antenna group is demonstrated in the Part 2 Report during algorithm validation. Therefore, no further simultaneous analysis is needed within an antenna group.

E.3. Smart Transmit Antenna Grouping

The 2nd generation of Smart Transmit (GEN2) operates based on pre-defined sub6 antenna groups (AG). Sub6/ WLAN/BT 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 either of the conditions below for all exposure scenarios:

- a) Sum of SAR of each antenna from each of the sub6 AGs and the RF exposure from radios outside Smart Transmit is less than regulatory limits. This condition must be demonstrated for all antenna combinations of sub6 AGs. (Or)
- b) Every antenna from each sub6 AG meets SPLSR criteria (Section 4.3.2(c) in FCC KDB 447498 D04) with every antenna from another sub6 AG. This criterion must be demonstrated for all antenna combinations for each pair of AGs.

This device supports two AGs: AG0 and AG1, with AG0 having 3 antennas (A,B,C) and AG1 having 4 antennas (E,F,G,H). The conditions are verified through the following criteria for a given exposure position:

- i) Summation criteria:
 - 1. Obtain *adjusted* SAR at *reported* P_{limit} for all supported Sub6/WLAN/BT frequency bands from all antennas supported in each antenna group. Since $multi\_Tx\_factor = 1.27 > 1$ for this model, *reported* P_{limit} is $\min\{P_{limit} + unc + 10 \cdot \log(multi\_Tx\_factor), P_{max} + unc\}$. Hence:

- If $EFS P_{limit} \leq P_{max}$, reported $P_{limit} = EFS P_{limit} + unc + 10 \cdot \log(\text{multi\_Tx\_factor})$;
 - Otherwise $reported P_{limit} = \max\{EFS P_{limit}, P_{max} + unc\}$.
2. Determine the overall maximum adjusted SAR from all Sub6/WLAN/BT radios for each antenna on each antenna group, denoted as $max.exp.ant_{AG0}(i)$ and $max.exp.ant_{AG1}(j)$
 3. Obtain reported SAR for each external radio, denoted as $reported.exp.NFC$ and $reported.exp.UWB$
 4. Demonstrate that the sum of these exposures meets: $max.exp.ant_{AG0}(i) + max.exp.ant_{AG1}(j) + reported.exp.NFC + reported.exp.UWB \leq 1.6 \text{ W/kg}$ for 1g and 4 W/kg for 10g

ii) SPLSR or composite exposure distribution criteria: When TER of an antenna pair is over the limit for an exposure position, SPLSR or composite exposure distribution can be done to demonstrate simultaneous transmission compliance:

1. SPLSR analysis for Sub6/WLAN/BT Antenna pairs:

- On an exposure position for each antenna group, obtain the highest adjusted SAR from all supported frequency bands on an antenna irrespective of supported simultaneous transmission scenarios for each DSI, along with the peak SAR locations.
- Per Qualcomm guidance, only Y-axis coordinates are used in the analysis for calculation simplicity.
- For Antj in bottom Antenna group (AG0), Y_Antj_AG0 coordinate represents the worst-case hotspot location that is closest to the top antenna group. Similarly, for Antk in top antenna group (AG1), Y_Antk_AG1 coordinate represents the worst-case hotspot location that is closest to the bottom antenna group.
- Using the above values, demonstrate for a given DSI that every antenna from one AG meets SPLSR criteria with every antenna in another AG for all frequency bands. The following formula is used to calculate the SPLSR between $Antj\_AG0$ and $Antk\_AG1$ for each exposure configuration:

$$SPLSR = \frac{(\max Antj\_AG0 + \max Antk\_AG1)^{1.5}}{|Y\_Antj\_AG0 - Y\_Antk\_AG1|}$$

- When $SPLSR \leq 0.04$ (rounded to 2 decimal places) for 1g SAR, or 0.1 for 10g SAR, the antenna pair qualifies for test exemption.

E.4. Simultaneous Transmission Analysis

Table E-2 –AG0 Maximum Reported SAR Values

DUT Configuration	Exposure Condition	Position	AG0 SAR (W/kg)		
			A+C	B	Maximum
Folder Closed	Head	Right Cheek	0.200	0.200	0.200
Folder Closed	Head	Right Tilt	0.127	0.200	0.200
Folder Closed	Head	Left Cheek	0.155	0.200	0.200
Folder Closed	Head	Left Tilt	0.111	0.200	0.200
Folder Closed	Body-worn	Back	1.298	1.220	1.298
Folder Closed	Body-worn	Front	0.330	0.589	0.589
Folder Closed	Hotspot	Back	1.298	1.220	1.298
Folder Closed	Hotspot	Front	0.330	0.563	0.563
Folder Closed	Hotspot	Top	-	-	-
Folder Closed	Hotspot	Bottom	0.267	0.577	0.577
Folder Closed	Hotspot	Right	0.521	-	0.521
Folder Closed	Hotspot	Left	0.188	0.097	0.188
Folder Open	Head	Right Cheek	0.139	0.200	0.200
Folder Open	Head	Right Tilt	0.200	0.085	0.200
Folder Open	Head	Left Cheek	0.200	0.200	0.200
Folder Open	Head	Left Tilt	0.189	0.159	0.189
Folder Open	Body-worn	Back	1.354	1.267	1.354
Folder Open	Body-worn	Front	0.880	0.758	0.880
Folder Open	Hotspot	Back	1.354	1.267	1.354
Folder Open	Hotspot	Front	0.880	0.847	0.880
Folder Open	Hotspot	Top	-	-	-
Folder Open	Hotspot	Bottom	0.352	0.814	0.814
Folder Open	Hotspot	Right	0.404	-	0.404

Table E-3 –AG1 Maximum Reported SAR Values

DUT Configuration	Exposure Condition	Position	AG1 (W/kg)						
			G	E	H	F	MIMO (H&F)	MIMO (F&E)	Maximum
Folder Closed	Head	Right Cheek	1.031	0.852	0.880	0.919	0.673	0.842	1.031
Folder Closed	Head	Right Tilt	1.146	0.936	0.997	0.999	0.867	0.884	1.146
Folder Closed	Head	Left Cheek	1.116	0.909	0.998	0.975	0.903	0.872	1.116
Folder Closed	Head	Left Tilt	1.396	0.999	0.865	0.998	0.999	1.003	1.396
Folder Closed	Body-worn	Back	1.594	0.890	0.999	0.998	0.997	1.207	1.594
Folder Closed	Body-worn	Front	0.480	0.401	0.288	0.406	0.349	0.366	0.480
Folder Closed	Hotspot	Back	1.594	0.890	0.999	0.998	0.831	1.121	1.594
Folder Closed	Hotspot	Front	0.480	0.297	0.288	0.406	0.349	0.352	0.480
Folder Closed	Hotspot	Top	0.853	0.229	-	0.547	0.459	0.500	0.853
Folder Closed	Hotspot	Bottom	-	-	-	-	-	-	-
Folder Closed	Hotspot	Right	0.091	0.135	0.342	-	0.158	0.146	0.342
Folder Closed	Hotspot	Left	-	-	-	0.127	0.069	0.060	0.127
Folder Closed	Phablet	Back	-	1.114	1.408	1.286	2.368	1.213	2.368
Folder Closed	Phablet	Front	-	0.297	0.442	0.472	0.318	0.408	0.472
Folder Closed	Phablet	Top	-	1.175	-	1.426	1.582	1.379	1.582
Folder Closed	Phablet	Bottom	-	-	-	-	-	-	-
Folder Closed	Phablet	Right	-	0.251	1.187	-	0.571	0.344	1.187
Folder Closed	Phablet	Left	-	-	-	0.169	0.140	0.061	0.169
Folder Open	Head	Right Cheek	0.936	0.227	0.986	1.000	0.998	0.849	1.000
Folder Open	Head	Right Tilt	0.958	0.164	0.997	0.984	0.991	1.000	1.000
Folder Open	Head	Left Cheek	0.267	0.998	1.000	0.312	0.213	0.951	1.000
Folder Open	Head	Left Tilt	0.434	0.457	0.487	0.386	0.273	0.361	0.487
Folder Open	Body-worn	Back	1.271	1.271	0.998	0.999	1.000	1.330	1.330
Folder Open	Body-worn	Front	0.979	0.937	0.947	0.562	0.879	1.261	1.261
Folder Open	Hotspot	Back	1.271	0.917	0.998	0.999	1.000	1.251	1.271
Folder Open	Hotspot	Front	0.979	0.917	0.947	0.562	0.879	1.261	1.261
Folder Open	Hotspot	Top	0.622	0.210	-	0.375	0.505	0.451	0.622
Folder Open	Hotspot	Bottom	-	-	-	-	-	-	-
Folder Open	Hotspot	Right	0.080	0.180	0.273	-	0.140	0.089	0.273
Folder Open	Hotspot	Left	-	-	-	-	-	-	-
Folder Open	Phablet	Back	-	1.043	1.536	1.776	1.099	1.737	1.776
Folder Open	Phablet	Front	-	1.435	1.689	0.737	0.529	2.228	2.228
Folder Open	Phablet	Top	-	0.980	-	2.495	2.496	1.529	2.496
Folder Open	Phablet	Bottom	-	-	-	-	-	-	-
Folder Open	Phablet	Right	-	0.133	1.175	-	0.121	0.259	1.175

Table E-4 –AG0+AG1 + NFC + UWB

DUT Configuration	Exposure Condition	Position	SAR (W/kg)				
			AG0	AG1	NFC	UWB	Sum
Folder Closed	Head	Right Cheek	0.200	1.031	-	-	1.231
Folder Closed	Head	Right Tilt	0.200	1.146	-	-	1.346
Folder Closed	Head	Left Cheek	0.200	1.116	-	-	1.316
Folder Closed	Head	Left Tilt	0.200	1.396	-	-	1.596
Folder Closed	Body-worn	Back	1.298	1.594	-	-	See Table E-5
Folder Closed	Body-worn	Front	0.589	0.480	-	-	1.069
Folder Closed	Hotspot	Back	1.298	1.594	-	-	See Table E-5
Folder Closed	Hotspot	Front	0.563	0.480	-	-	1.043
Folder Closed	Hotspot	Top	-	0.853	-	-	0.853
Folder Closed	Hotspot	Bottom	0.577	-	-	-	0.577
Folder Closed	Hotspot	Right	0.521	0.342	-	-	0.863
Folder Closed	Hotspot	Left	0.188	0.127	-	-	0.315
Folder Closed	Phablet	Back	-	2.368	0.000	0.001	2.369
Folder Closed	Phablet	Front	-	0.472	0.000	0.001	0.473
Folder Closed	Phablet	Top	-	1.582	0.000	0.002	1.584
Folder Closed	Phablet	Bottom	-	-	-	-	-
Folder Closed	Phablet	Right	-	1.187	-	-	1.187
Folder Closed	Phablet	Left	-	0.169	0.000	0.000	0.169
Folder Open	Head	Right Cheek	0.200	1.000	-	-	1.200
Folder Open	Head	Right Tilt	0.200	1.000	-	-	1.200
Folder Open	Head	Left Cheek	0.200	1.000	-	-	1.200
Folder Open	Head	Left Tilt	0.189	0.487	-	-	0.676
Folder Open	Body-worn	Back	1.354	1.330	-	-	See Table E-6
Folder Open	Body-worn	Front	0.880	1.261	-	-	See Table E-6
Folder Open	Hotspot	Back	1.354	1.271	-	-	See Table E-6
Folder Open	Hotspot	Front	0.880	1.261	-	-	See Table E-6
Folder Open	Hotspot	Top	-	0.622	-	-	0.622
Folder Open	Hotspot	Bottom	0.814	-	-	-	0.814
Folder Open	Hotspot	Right	0.404	0.273	-	-	0.677
Folder Open	Hotspot	Left	-	-	-	-	-
Folder Open	Phablet	Back	-	1.776	0.000	0.005	1.781
Folder Open	Phablet	Front	-	2.228	0.000	0.000	2.228
Folder Open	Phablet	Top	-	2.496	0.000	0.002	2.498
Folder Open	Phablet	Bottom	-	-	-	-	-
Folder Open	Phablet	Right	-	1.175	-	-	1.175

Table E-5 Folder Closed SPLSR

DUT Configuration	Exposure Condition	Position	AG0			AG1			Sum SAR (W/kg)	SPLSR
			Antenna	SAR (W/kg)	Y coordinate	Antenna	SAR (W/kg)	Y coordinate		
Folder Closed	Body-worn	Back	A+C	1.298	-64.5	G	1.594	74.1	2.892	0.04
Folder Closed	Body-worn	Back	A+C	1.298	-64.5	E	0.890	59.4	2.188	0.03
Folder Closed	Body-worn	Back	A+C	1.298	-64.5	H	0.999	24.0	2.297	0.04
Folder Closed	Body-worn	Back	A+C	1.298	-64.5	F	0.998	68.8	2.296	0.03
Folder Closed	Body-worn	Back	A+C	1.298	-64.5	MIMO (H&F)	0.997	79.2	2.295	0.02
Folder Closed	Body-worn	Back	A+C	1.298	-64.5	MIMO (F&E)	1.207	75.4	2.505	0.03
Folder Closed	Body-worn	Back	B	1.220	-77.5	G	1.594	74.1	2.814	0.03
Folder Closed	Body-worn	Back	B	1.220	-77.5	E	0.890	59.4	2.110	0.02
Folder Closed	Body-worn	Back	B	1.220	-77.5	H	0.999	24.0	2.219	0.03
Folder Closed	Body-worn	Back	B	1.220	-77.5	F	0.998	68.8	2.218	0.02
Folder Closed	Body-worn	Back	B	1.220	-77.5	MIMO (H&F)	0.997	79.2	2.217	0.02
Folder Closed	Body-worn	Back	B	1.220	-77.5	MIMO (F&E)	1.207	75.4	2.427	0.02
Folder Closed	Hotspot	Back	A+C	1.298	-64.5	G	1.594	74.1	2.892	0.04
Folder Closed	Hotspot	Back	A+C	1.298	-64.5	E	0.890	59.4	2.188	0.03
Folder Closed	Hotspot	Back	A+C	1.298	-64.5	H	0.999	24.0	2.297	0.04
Folder Closed	Hotspot	Back	A+C	1.298	-64.5	F	0.998	69.2	2.296	0.03
Folder Closed	Hotspot	Back	A+C	1.298	-64.5	MIMO (H&F)	0.831	82.0	2.129	0.02
Folder Closed	Hotspot	Back	A+C	1.298	-64.5	MIMO (F&E)	1.121	75.4	2.419	0.03
Folder Closed	Hotspot	Back	B	1.220	-77.5	G	1.594	74.1	2.814	0.03
Folder Closed	Hotspot	Back	B	1.220	-77.5	E	0.890	59.4	2.110	0.02
Folder Closed	Hotspot	Back	B	1.220	-77.5	H	0.999	24.0	2.219	0.03
Folder Closed	Hotspot	Back	B	1.220	-77.5	F	0.998	69.2	2.218	0.02
Folder Closed	Hotspot	Back	B	1.220	-77.5	MIMO (H&F)	0.831	82.0	2.051	0.02
Folder Closed	Hotspot	Back	B	1.220	-77.5	MIMO (F&E)	1.121	75.4	2.341	0.02

Table E-6 Folder Open SPLSR

DUT Configuration	Exposure Condition	Position	AG0			AG1			Sum SAR (W/kg)	SPLSR
			Antenna	SAR (W/kg)	Y coordinate	Antenna	SAR (W/kg)	Y coordinate		
Folder Open	Body-worn	Back	A+C	1.354	54.1	G	1.271	-81.0	2.625	0.03
Folder Open	Body-worn	Back	A+C	1.354	54.1	E	1.271	-72.5	2.625	0.03
Folder Open	Body-worn	Back	A+C	1.354	54.1	H	0.998	-30.0	2.352	0.04
Folder Open	Body-worn	Back	A+C	1.354	54.1	F	0.999	-63.6	2.353	0.03
Folder Open	Body-worn	Back	A+C	1.354	54.1	MIMO (H&F)	1.000	-81.0	2.354	0.03
Folder Open	Body-worn	Back	A+C	1.354	54.1	MIMO (F&E)	1.330	-76.6	2.684	0.03
Folder Open	Body-worn	Back	B	1.267	67	G	1.271	-81.0	2.538	0.03
Folder Open	Body-worn	Back	B	1.267	67	E	1.271	-72.5	2.538	0.03
Folder Open	Body-worn	Back	B	1.267	67	H	0.998	-30.0	2.265	0.04
Folder Open	Body-worn	Back	B	1.267	67	F	0.999	-63.6	2.266	0.03
Folder Open	Body-worn	Back	B	1.267	67	MIMO (H&F)	1.000	-81.0	2.267	0.02
Folder Open	Body-worn	Back	B	1.267	67	MIMO (F&E)	1.330	-76.6	2.597	0.03
Folder Open	Hotspot	Back	A+C	1.354	54.1	G	1.271	-81.0	2.625	0.03
Folder Open	Hotspot	Back	A+C	1.354	54.1	E	0.917	-72.5	2.271	0.03
Folder Open	Hotspot	Back	A+C	1.354	54.1	H	0.998	-30.0	2.352	0.04
Folder Open	Hotspot	Back	A+C	1.354	54.1	F	0.999	-63.6	2.353	0.03
Folder Open	Hotspot	Back	A+C	1.354	54.1	MIMO (H&F)	1.000	-82.5	2.354	0.03
Folder Open	Hotspot	Back	A+C	1.354	54.1	MIMO (F&E)	1.251	-79.2	2.605	0.03
Folder Open	Hotspot	Back	B	1.267	67	G	1.271	-81.0	2.538	0.03
Folder Open	Hotspot	Back	B	1.267	67	E	0.917	-72.5	2.184	0.02
Folder Open	Hotspot	Back	B	1.267	67	H	0.998	-30.0	2.265	0.04
Folder Open	Hotspot	Back	B	1.267	67	F	0.999	-63.6	2.266	0.03
Folder Open	Hotspot	Back	B	1.267	67	MIMO (H&F)	1.000	-82.5	2.267	0.02
Folder Open	Hotspot	Back	B	1.267	67	MIMO (F&E)	1.251	-79.2	2.518	0.03
Folder Open	Body-worn	Front	A+C	0.880	-65.9	G	0.979	81.9	1.859	0.02
Folder Open	Body-worn	Front	A+C	0.880	-65.9	E	0.937	65.5	1.817	0.02
Folder Open	Body-worn	Front	A+C	0.880	-65.9	H	0.947	28.0	1.827	0.03
Folder Open	Body-worn	Front	A+C	0.880	-65.9	F	0.562	69.5	1.442	0.01
Folder Open	Body-worn	Front	A+C	0.880	-65.9	MIMO (H&F)	0.879	83.0	1.759	0.02
Folder Open	Body-worn	Front	A+C	0.880	-65.9	MIMO (F&E)	1.261	71.6	2.141	0.02
Folder Open	Body-worn	Front	B	0.758	-83.9	G	0.979	81.9	1.737	0.01
Folder Open	Body-worn	Front	B	0.758	-83.9	E	0.937	65.5	1.695	0.01
Folder Open	Body-worn	Front	B	0.758	-83.9	H	0.947	28.0	1.705	0.02
Folder Open	Body-worn	Front	B	0.758	-83.9	F	0.562	69.5	1.320	0.01
Folder Open	Body-worn	Front	B	0.758	-83.9	MIMO (H&F)	0.879	83.0	1.637	0.01
Folder Open	Body-worn	Front	B	0.758	-83.9	MIMO (F&E)	1.261	71.6	2.019	0.02
Folder Open	Hotspot	Front	A+C	0.880	-66.5	G	0.979	81.9	1.859	0.02
Folder Open	Hotspot	Front	A+C	0.880	-66.5	E	0.917	65.5	1.797	0.02
Folder Open	Hotspot	Front	A+C	0.880	-66.5	H	0.947	28.0	1.827	0.03
Folder Open	Hotspot	Front	A+C	0.880	-66.5	F	0.562	69.5	1.442	0.01
Folder Open	Hotspot	Front	A+C	0.880	-66.5	MIMO (H&F)	0.879	83.0	1.759	0.02
Folder Open	Hotspot	Front	A+C	0.880	-66.5	MIMO (F&E)	1.261	71.6	2.141	0.02
Folder Open	Hotspot	Front	B	0.847	-81.9	G	0.979	81.9	1.826	0.02
Folder Open	Hotspot	Front	B	0.847	-81.9	E	0.917	65.5	1.764	0.02
Folder Open	Hotspot	Front	B	0.847	-81.9	H	0.947	28.0	1.794	0.02
Folder Open	Hotspot	Front	B	0.847	-81.9	F	0.562	69.5	1.409	0.01
Folder Open	Hotspot	Front	B	0.847	-81.9	MIMO (H&F)	0.879	83.0	1.726	0.01
Folder Open	Hotspot	Front	B	0.847	-81.9	MIMO (F&E)	1.261	71.6	2.108	0.02

Notes:

- For all combinations where the SAR sum of AG0+AG1 +NFC+ UWB is not greater than regulatory limits or SPLRS is under the limit, there's no further analysis required for compliance demonstration
- See section E.5 for coordinates details for all bands/modes.

E.5. Y-coordinates

Table E-7

AG0 Y coordinates [mm]				
Exposure condition	Folder Closed Body-worn		Folder Closed Hotspot	
Position	Back		Back	
Band	Antenna			
	A+C	B	A+C	B
GSM 850	-67	-	-67	-
GSM 1900	-	-77.7	-	-77.7
UMTS Band 5	-64.5	-	-64.5	-
LTE Band 12	-66.9	-	-66.9	-
LTE Band 13	-67.5	-	-67.5	-
LTE Band 5	-65.4	-	-65.4	-
LTE Band 66	-	-83.1	-	-83.1
LTE Band 25	-	-85.1	-	-85.1
LTE Band 41	-	-80	-	-80
NR Band n5	-68.3	-	-68.3	-
NR Band n66	-	-87.3	-	-87.3
NR Band n41	-	-77.5	-	-77.5
Overall Coordinate	-64.5	-77.5	-64.5	-77.5

Table E-8

AG1 Y Coordinates [mm]												
Exposure condition	Folder Closed Body-worn						Folder Closed Hotspot					
Position	Back						Back					
Band	Antenna											
	G	E	H	F	MIMO (H&F)	MIMO (F&E)	G	E	H	F	MIMO (H&F)	MIMO (F&E)
LTE Band 66	77.5	-	-	-	-	-	77.5	-	-	-	-	-
LTE Band 25	74.4	-	-	-	-	-	74.4	-	-	-	-	-
LTE Band 41	77.5	-	-	-	-	-	77.5	-	-	-	-	-
NR Band n66	74.1	-	-	-	-	-	74.1	-	-	-	-	-
NR Band n41	81.5	-	-	-	-	-	81.5	-	-	-	-	-
2.4 GHz WIFI	-	-	24	79	82	-	-	-	24	79	82	-
5 GHz WIFI	-	74.9	-	68.8	-	75.4	-	74.9	-	69.2	-	75.4
6 GHz WIFI	-	59.4	-	70	-	78.4	-	59.4	-	70	-	78.4
2.4 GHz Bluetooth	-	-	36.7	75.5	79.2	-	-	-	36.7	75.5	N/A	-
Overall Coordinate	74.1	59.4	24	68.8	79.2	75.4	74.1	59.4	24	69.2	82	75.4

Table E-9

AG0 Y coordinates [mm]								
Exposure condition	Folder Open Body-worn				Folder Open Hotspot			
Position	Back		Front		Back		Front	
Band	Antenna							
	A+C	B	A+C	B	A+C	B	A+C	B
GSM 850	54.1	-	-65.9	-	54.1	-	-66.5	-
GSM 1900	-	75	-	-83.9	-	75	-	-81.9
UMTS Band 5	71.7	-	-76.8	-	71.7	-	-76.8	-
LTE Band 12	67.9	-	-80.5	-	67.9	-	-80.5	-
LTE Band 13	66.7	-	-76.9	-	66.7	-	-76.9	-
LTE Band 5	66.7	-	-78	-	66.7	-	-78.0	-
LTE Band 66	-	76.8	-	-84.3	-	76.8	-	-84.3
LTE Band 25	-	76.8	-	-84.3	-	76.8	-	-84.3
LTE Band 41	-	67	-	-90	-	67	-	-90.0
NR Band n5	76	-	-76.8	-	76	-	-76.8	-
NR Band n66	-	81.7	-	-84.6	-	81.7	-	-84.6
NR Band n41	-	75	-	-85	-	75	-	-85.0
Overall Coordinate	54.1	67	-65.9	-83.9	54.1	67	-66.5	-81.9

Table E-10

AG1 Y Coordinates [mm]																								
Exposure condition Position	Folder Open Body-worn												Folder Open Hotspot											
	Back						Front						Back						Front					
	Antenna																							
Band	G	E	H	F	MIMO (H&F)	MIMO (F&E)	G	E	H	F	MIMO (H&F)	MIMO (F&E)	G	E	H	F	MIMO (H&F)	MIMO (F&E)	G	E	H	F	MIMO (H&F)	MIMO (F&E)
LTE Band 66	-84	-	-	-	-	-	81.9	-	-	-	-	-	-84	-	-	-	-	-	81.9	-	-	-	-	-
LTE Band 25	-82.2	-	-	-	-	-	81.9	-	-	-	-	-	-82.2	-	-	-	-	-	81.9	-	-	-	-	-
LTE Band 41	-81	-	-	-	-	-	84.5	-	-	-	-	-	-81	-	-	-	-	-	84.5	-	-	-	-	-
NR Band n66	-83.9	-	-	-	-	-	83.2	-	-	-	-	-	-83.9	-	-	-	-	-	83.2	-	-	-	-	-
NR Band n41	-83.5	-	-	-	-	-	82	-	-	-	-	-	-83.5	-	-	-	-	-	82	-	-	-	-	-
2.4 GHz WiFi	-	-	-30	-71	-82.5	-	-	-	34.1	84.5	83	-	-	-	-30	-71	-82.5	-	-	-	34.1	84.5	83	-
5 GHz WiFi	-	-72.5	-	-78.7	-	-76.6	-	70.8	-	69.5	-	75	-	-72.5	-	-78.7	-	-79.2	-	70.8	-	69.5	-	75.8
6 GHz WiFi	-	-78.4	-	-63.6	-	-80.5	-	65.5	-	78.9	-	71.6	-	-78.4	-	-63.6	-	-80.5	-	65.5	-	78.9	-	71.6
2.4 GHz Bluetooth	-	-	-35	-80	-81	-	-	-	28	84	87.5	-	-	-	-35	-80	N/A	-	-	-	28	84	N/A	-
Overall Coordinate	-81	-72.5	-30	-63.6	-81	-76.6	81.9	65.5	28	69.5	83	71.6	-81	-72.5	-30	-63.6	-82.5	-79.2	81.9	65.5	28	69.5	83	71.6

E.6. Conclusion

The above numerical summed results and SPLSR for all the combinations of antenna groups are sufficient to show that AG0 is mutually exclusive from AG1. Therefore, no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D04v01 and IEEE 1528- 2013 Section 6.3.4.1.