

APPENDIX D: ANTENNA GROUPING ANALYSIS & JUSTIFICATION

D.1 Sub6 Antenna Groups

The 2nd generation of Smart Transmit (GEN2) operates based on pre-defined sub6 antenna groups (AG) and mmW module groups (MG). 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 either of below conditions for all exposure scenarios:

- a) 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. 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 D01) with every antenna from another sub6 AG. This criteria must be demonstrated for all antenna combinations for each pair of AGs.

This device supports two sub6 AG: AG0 and AG1, with AG0 having 4 antennas (A, B, C, D) and AG1 having 4 antennas (E, F, G, H), and two WIFI/BT antennas outside of Smart Transmit. The conditions are verified through the following criterias:

i) (SAR1 + SAR2 criteria): If SPLSR criteria is not used, then the highest reported SAR at P_{limit} (or P_{max} when $P_{limit} > P_{max}$) 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 P_{limit} (or P_{max} when $P_{limit} > P_{max}$) 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: $\{ [\text{max.SAR.AG0} + \text{max.SAR.AG1}] + \text{WIFI/BT Ant 1} + \text{WIFI/BT Ant 2} \} \leq 1.6$ (for 1g, or 4.0 for 10g).

ii) (SPLSR criteria): For each antenna, obtain the highest reported SAR value at P_{limit} 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:

- SPLSR criteria should be met for all antenna pair combinations of AG0 and AG1: {antenna (A, B, C, D) in AG0; antenna (E, F, G, H) in AG1. As it can be seen, these include all combinations of antenna groups, antennas, and frequency bands.

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: $\{\text{max.SAR.AG0} + \text{WIFI/BT Ant 1} + \text{WIFI/BT Ant 2}\} \leq 1.6$ and $\{\text{max.SAR.AG1} + \text{WIFI/BT Ant 1} + \text{WIFI/BT Ant 2}\} \leq 1.6$ for compliance demonstration (for 1g, or 4.0 for 10g).

FCC ID A3LSMS901U	 PCTEST Proud to be part of element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 1 of 16

If SPLSR criteria evaluation and analysis is needed to determine compliance for a certain DSI configuration, SPLSR is performed by taking the highest reported SAR for each of the supported technologies and bands per antenna, along with the peak SAR locations. Per Qualcomm guidance, only Y-axis coordinates are recorded in the analysis for calculation simplicity (assumes all 0mm of separation on the x-axis). Peak locations are documented in Section D.7 below for each DSI configuration.

For bottom AG0, Y_max coordinate represents the worst case hotspot location that is closest to the top AG1. Similarly, for top AG1, Y_min coordinate represents the worst case hotspot location that is closest to the bottom AG0.

The following formula is used to calculate the SPLSR between AG0 and AG1 for each exposure configuration:

$$SPLSR = \frac{(Max\ SAR\ AG0 + Max\ SAR\ AG1)^{1.5}}{|Y_{max} - Y_{min}|}$$

D.2 Head (DSI = 2) SAR Antenna Group Analysis

Table D-1
DSI=2 Held-to-ear AG0 Highest Reported SAR

AG0						
Head SAR	Configuration	A	B	C	D	Max
	Right Cheek	0.350	0.071	0.015	0.000	0.350
	Right Tilt	0.223	0.061	0.013	0.002	0.223
	Left Cheek	0.339	0.129	0.043	0.000	0.339
	Left Tilt	0.233	0.094	0.010	0.000	0.233

Table D-2
DSI=2 Held-to-ear AG1 Highest Reported SAR

AG1						
Head SAR	Configuration	E	F	G	H	Max
	Right Cheek	0.423	0.589	0.762	0.002	0.762
	Right Tilt	0.369	0.749	0.355	0.013	0.749
	Left Cheek	0.309	0.983	0.191	0.000	0.983
	Left Tilt	0.290	1.026	0.220	0.000	1.026

Please refer to Table E-1 in Appendix E for highest reported simultaneous held-to-ear SAR of WLAN/BT antennas.

FCC ID A3LSMS901U	 PCTEST Proud to be part of  element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 2 of 16

Table D-3
DSI=2 Held-to-ear AG Verification

	Configuration	AG0	AG1	WLAN/BT Worst-case Combination	AG0 + AG1 + WLAN/BT Worst-case
Head SAR	Right Cheek	0.350	0.762	0.558	See Table Below
	Right Tilt	0.223	0.749	0.513	1.485
	Left Cheek	0.339	0.983	0.521	See Table Below
	Left Tilt	0.233	1.026	0.221	1.48

Right Cheek							
Ant Combination	AG0		AG1		WLAN/BT Worst-case	AG0 + AG1 + WLAN/BT	SPLSR
	SAR	Position	SAR	Position			
Ant A-Ant E	0.350	N/A	0.423	N/A	0.558	1.331	N/A
Ant A-Ant F	0.350	N/A	0.589	N/A	0.558	1.497	N/A
Ant A-Ant G	0.350	-48.360	0.762	-18.090	0.558	See Note 2	0.039
Ant A-Ant H	0.350	N/A	0.002	N/A	0.558	0.910	N/A
Ant B-Ant E	0.071	N/A	0.423	N/A	0.558	1.052	N/A
Ant B-Ant F	0.071	N/A	0.589	N/A	0.558	1.218	N/A
Ant B-Ant G	0.071	N/A	0.762	N/A	0.558	1.391	N/A
Ant B-Ant H	0.071	N/A	0.002	N/A	0.558	0.631	N/A
Ant C-Ant E	0.015	N/A	0.423	N/A	0.558	0.996	N/A
Ant C-Ant F	0.015	N/A	0.589	N/A	0.558	1.162	N/A
Ant C-Ant G	0.015	N/A	0.762	N/A	0.558	1.335	N/A
Ant C-Ant H	0.015	N/A	0.002	N/A	0.558	0.575	N/A
Ant D-Ant E	0.000	N/A	0.423	N/A	0.558	0.981	N/A
Ant D-Ant F	0.000	N/A	0.589	N/A	0.558	1.147	N/A
Ant D-Ant G	0.000	N/A	0.762	N/A	0.558	1.320	N/A
Ant D-Ant H	0.000	N/A	0.002	N/A	0.558	0.560	N/A

FCC ID A3LSMS901U	 PCTEST Proud to be part of the element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 3 of 16

Left Cheek							
Ant Combination	AG0		AG1		WLAN/BT Worst-case	AG0 + AG1 + WLAN/BT	SPLSR
	SAR	Position	SAR	Position			
Ant A-Ant E	0.339	N/A	0.309	N/A	0.521	1.169	N/A
Ant A-Ant F	0.339	-57.050	0.983	2.440	0.521	See Note 2	0.026
Ant A-Ant G	0.339	N/A	0.191	N/A	0.521	1.051	N/A
Ant A-Ant H	0.339	N/A	0.000	N/A	0.521	0.860	N/A
Ant B-Ant E	0.129	N/A	0.309	N/A	0.521	0.959	N/A
Ant B-Ant F	0.129	-67.330	0.983	2.440	0.521	See Note 2	0.017
Ant B-Ant G	0.129	N/A	0.191	N/A	0.521	0.841	N/A
Ant B-Ant H	0.129	N/A	0.000	N/A	0.521	0.650	N/A
Ant C-Ant E	0.043	N/A	0.309	N/A	0.521	0.873	N/A
Ant C-Ant F	0.043	N/A	0.983	N/A	0.521	1.547	N/A
Ant C-Ant G	0.043	N/A	0.191	N/A	0.521	0.755	N/A
Ant C-Ant H	0.043	N/A	0.000	N/A	0.521	0.564	N/A
Ant D-Ant E	0.000	N/A	0.309	N/A	0.521	0.830	N/A
Ant D-Ant F	0.000	N/A	0.983	N/A	0.521	1.504	N/A
Ant D-Ant G	0.000	N/A	0.191	N/A	0.521	0.712	N/A
Ant D-Ant H	0.000	N/A	0.000	N/A	0.521	0.521	N/A

Notes:

1. For all combinations where the sum of AG0+AG1+WLAN/BT is less than 1.6 W/kg, there's no further analysis required for compliance demonstration.
2. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. Please see Section D.7 for Y-axis peak locations

FCC ID A3LSMS901U	 PCTEST Proud to be part of 	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 4 of 16

D.3 Body-worn (DSI = 0) SAR Antenna Group Analysis

Table D-4
DSI=0 Body-worn AG0 Highest Reported SAR

AG0						
Body-worn SAR	Configuration	A	B	C	D	Max
	Back	1.151	0.397	0.031	0.045	1.151

Table D-5
DSI=0 Body-worn AG1 Highest Reported SAR

AG1						
Body-worn SAR	Configuration	E	F	G	H	Max
	Back	0.016	0.261	0.135	0.067	0.261

Please refer to Table E-3 in Appendix E for highest reported simultaneous body-worn SAR of WLAN/BT antennas.

Table D-6
DSI=0 Body-worn AG Verification

	Configuration	AG0	AG1	WLAN/BT Worst-case Combination	AG0 + AG1 + WLAN/BT Worst-case
Body-worn SAR	Back	1.151	0.261	0.356	See Table Below

Back							
Ant Combination	AG0		AG1		WLAN/BT Worst-case	AG0 + AG1 + WLAN/BT	SPLSR
	SAR	Position	SAR	Position			
Ant A-Ant E	1.151	N/A	0.016	N/A	0.356	1.523	N/A
Ant A-Ant F	1.151	0.000	0.261	53.000	0.356	See Note 2	0.032
Ant A-Ant G	1.151	0.000	0.135	55.000	0.356	See Note 2	0.027
Ant A-Ant H	1.151	N/A	0.067	N/A	0.356	1.574	N/A
Ant B-Ant E	0.397	N/A	0.016	N/A	0.356	0.769	N/A
Ant B-Ant F	0.397	N/A	0.261	N/A	0.356	1.014	N/A
Ant B-Ant G	0.397	N/A	0.135	N/A	0.356	0.888	N/A
Ant B-Ant H	0.397	N/A	0.067	N/A	0.356	0.820	N/A
Ant C-Ant E	0.031	N/A	0.016	N/A	0.356	0.403	N/A
Ant C-Ant F	0.031	N/A	0.261	N/A	0.356	0.648	N/A
Ant C-Ant G	0.031	N/A	0.135	N/A	0.356	0.522	N/A
Ant C-Ant H	0.031	N/A	0.067	N/A	0.356	0.454	N/A
Ant D-Ant E	0.045	N/A	0.016	N/A	0.356	0.417	N/A
Ant D-Ant F	0.045	N/A	0.261	N/A	0.356	0.662	N/A
Ant D-Ant G	0.045	N/A	0.135	N/A	0.356	0.536	N/A
Ant D-Ant H	0.045	N/A	0.067	N/A	0.356	0.468	N/A

Notes:

- For all combinations where the sum of AG0+AG1+WLAN/BT is less than 1.6 W/kg, there's no further analysis required for compliance demonstration.

FCC ID A3LSMS901U	 PCTEST Proud to be part of	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 5 of 16

2. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. Please see Section D.7 for Y-axis peak locations.

D.4 Hotspot (DSI = 3) SAR Antenna Group Analysis

Table D-7
DSI=3 Hotspot AG0 Highest Reported SAR

AG0						
Hotspot SAR	Configuration	A	B	C	D	Max
	Back	0.731	0.358	0.058	0.111	0.731
	Front	0.705	0.355	0.061	0.016	0.705
	Top	0.000	0.000	0.000	0.000	-
	Bottom	1.250	0.890	0.038	0.018	1.250
	Right	0.632	0.000	0.000	0.008	0.632
	Left	0.397	0.340	0.111	0.000	0.397

Table D-8
DSI=3 Hotspot AG1 Highest Reported SAR

AG1						
Hotspot SAR	Configuration	E	F	G	H	Max
	Back	0.044	0.528	0.236	0.185	0.528
	Front	0.163	0.311	0.172	0.000	0.311
	Top	0.084	0.572	0.166	0.011	0.572
	Bottom	0.000	0.000	0.000	0.000	-
	Right	0.001	0.105	0.000	0.000	0.105
	Left	0.013	0.000	0.493	0.000	0.493

Please refer to Table E-5 in Appendix E for highest reported simultaneous hotspot SAR of WLAN/BT antennas.

Table D-9
DSI=3 Hotspot AG Verification

	Configuration	AG0	AG1	WLAN/BT Worst-case Combination	AG0 + AG1 + WLAN/BT Worst-case
Hotspot SAR	Back	0.731	0.528	0.934	See Table Below
	Front	0.705	0.311	0.298	1.314
	Top	0.000	0.572	0.170	0.742
	Bottom	1.250	0.000	-	1.250
	Right	0.632	0.105	-	0.737
	Left	0.397	0.493	0.494	1.384

FCC ID A3LSMS901U	 PCTEST Proud to be part of 	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 6 of 16

Back							
Ant Combination	AG0		AG1		WLAN/BT Worst-case	AG0 + AG1 + WLAN/BT	SPLSR
	SAR	Position	SAR	Position			
Ant A-Ant E	0.731	-55.500	0.044	69.000	0.934	See Note 2	0.005
Ant A-Ant F	0.731	-55.500	0.528	55.200	0.934	See Note 2	0.013
Ant A-Ant G	0.731	-55.500	0.236	52.500	0.934	See Note 2	0.009
Ant A-Ant H	0.731	-55.500	0.185	52.000	0.934	See Note 2	0.008
Ant B-Ant E	0.358	N/A	0.044	N/A	0.934	1.336	N/A
Ant B-Ant F	0.358	-55.600	0.528	55.200	0.934	See Note 2	0.008
Ant B-Ant G	0.358	N/A	0.236	N/A	0.934	1.528	N/A
Ant B-Ant H	0.358	N/A	0.185	N/A	0.934	1.477	N/A
Ant C-Ant E	0.058	N/A	0.044	N/A	0.934	1.036	N/A
Ant C-Ant F	0.058	N/A	0.528	N/A	0.934	1.520	N/A
Ant C-Ant G	0.058	N/A	0.236	N/A	0.934	1.228	N/A
Ant C-Ant H	0.058	N/A	0.185	N/A	0.934	1.177	N/A
Ant D-Ant E	0.111	N/A	0.044	N/A	0.934	1.089	N/A
Ant D-Ant F	0.111	N/A	0.528	N/A	0.934	1.573	N/A
Ant D-Ant G	0.111	N/A	0.236	N/A	0.934	1.281	N/A
Ant D-Ant H	0.111	N/A	0.185	N/A	0.934	1.230	N/A

Notes:

1. For all combinations where the sum of AG0+AG1+WLAN/BT is less than 1.6, there's no further analysis required for compliance demonstration.
2. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D01v06. Please see Section D.7 for Y-axis peak locations.

D.5 Max Phablet (DSI = 0) SAR Antenna Group Analysis

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

Table D-10
DSI=0 Max Phablet AG0 Highest Reported SAR

AG0						
Phablet SAR	Configuration	A	B	C	D	Max
	Back	1.366	0.507	0.000	0.000	1.366
	Front	1.652	0.519	0.000	0.000	1.652
	Top	0.000	0.000	0.000	0.000	-
	Bottom	1.950	0.638	0.000	0.000	1.950
	Right	0.546	0.000	0.000	0.000	0.546
	Left	2.238	2.341	0.509	0.000	2.341

FCC ID A3LSMS901U	 PCTEST Proud to be part of	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 7 of 16

Table D-11
DSI=0 Max Phablet AG1 Highest Reported SAR

AG1						
Phablet SAR	Configuration	E	F	G	H	Max
	Back	0.000	0.952	1.352	0.000	1.352
	Front	0.000	0.000	0.000	0.000	-
	Top	0.000	2.650	0.000	0.000	2.650
	Bottom	0.000	0.000	0.000	0.000	-
	Right	0.000	0.000	0.000	0.000	-
	Left	0.000	0.000	2.573	0.000	2.573

Please refer to Table E-17 in Appendix E for highest reported simultaneous phablet SAR of WLAN/BT antennas.

Table D-12
DSI=0 Max Phablet AG Verification

	Configuration	AG0	AG1	WLAN/BT Worst-case Combination	AG0 + AG1 + WLAN/BT Worst-case
Phablet SAR	Back	1.366	1.352	1.216	3.934
	Front	1.652	0.000	1.156	2.808
	Top	0.000	2.650	1.150	3.8
	Bottom	1.950	0.000	-	1.95
	Right	0.546	0.000	-	0.546
	Left	2.341	2.573	2.047	See Table Below

Left							
Ant Combination	AG0		AG1		WLAN/BT Worst-case	AG0 + AG1 + WLAN/BT	SPLSR
	SAR	Position	SAR	Position			
Ant A-Ant G	2.238	-55.500	2.573	54.200	2.047	See Note 2	0.096
Ant B-Ant G	2.341	-55.200	2.573	54.200	2.047	See Note 2	0.100
Ant C-Ant G	0.509	-54.700	2.573	54.200	2.047	See Note 2	0.050

Notes:

- For all combinations where the sum of AG0+AG1+WLAN/BT is less than 4W/kg, there's no further analysis required for compliance demonstration.
- No evaluation was performed to determine the aggregate 10g SAR for these configurations as the SPLSR ratio between the antenna pairs was not greater than 0.10 per FCC KDB 447498 D01v06. Please see Section D.7 for Y-axis peak locations.

FCC ID A3LSMS901U	 PCTEST Proud to be part of element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset	APPENDIX D: Page 8 of 16		

D.6 Reduced Phablet (DSI = 1) SAR Antenna Group Analysis

For SAR summation, the highest reported SAR across all test distances was used as the most conservative evaluation for simultaneous transmission analysis for each device edge.

Per FCC KDB Publication 648474 D04 Handset SAR, Phablet SAR tests were not required if wireless router 1g SAR (scaled to the maximum output power, including tolerance) < 1.2 W/kg. Therefore no further analysis beyond the tables included in this section was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

Table D-13
DSI=1 Reduced Phablet AG0 Highest Reported SAR

AG0						
Phablet SAR	Configuration	A	B	C	D	Max
	Back	2.912	3.085	0.000	0.000	3.085
	Front	1.924	1.697	0.000	0.000	1.924
	Top	0.000	0.000	0.000	0.000	-
	Bottom	2.503	1.858	0.000	0.000	2.503
	Right	0.546	0.000	0.000	0.000	0.546
	Left	2.238	2.341	0.509	0.000	2.341

Table D-14
DSI=1 Reduced Phablet AG1 Highest Reported SAR

AG1						
Phablet SAR	Configuration	E	F	G	H	Max
	Back	0.000	0.952	1.352	0.000	1.352
	Front	0.000	0.000	0.000	0.000	-
	Top	0.000	2.650	0.000	0.000	2.650
	Bottom	0.000	0.000	0.000	0.000	-
	Right	0.000	0.000	0.000	0.000	-
	Left	0.000	0.000	2.573	0.000	2.573

Please refer to Table E-17 in Appendix E for highest reported simultaneous phablet SAR of WLAN/BT antennas.

Table D-15
DSI=1 Reduced Phablet AG Verification

	Configuration	AG0	AG1	WLAN/BT Worst-case Combination	AG0 + AG1 + WLAN/BT Worst-case
Phablet SAR	Back	3.085	1.352	1.216	See Table Below
	Front	1.924	0.000	1.156	3.08
	Top	0.000	2.650	1.150	3.8
	Bottom	2.503	0.000	-	2.503
	Right	0.546	0.000	-	0.546
	Left	2.341	2.573	2.047	See Table Below

FCC ID A3LSMS901U	 PCTEST Proud to be part of 	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 9 of 16

Back							
	AG0		AG1		WLAN/BT Worst-case	AG0 + AG1 + WLAN/BT	SPLSR
Ant Combination	SAR	Position	SAR	Position			
Ant A-Ant F	2.912	-67.300	0.952	72.500	1.216	See Note 2	0.054
Ant A-Ant G	2.912	-67.300	1.352	55.700	1.216	See Note 2	0.072
Ant B-Ant F	3.085	-65.600	0.952	72.500	1.216	See Note 2	0.059
Ant B-Ant G	3.085	-65.600	1.352	55.700	1.216	See Note 2	0.077
Left							
	AG0		AG1		WLAN/BT Worst-case	AG0 + AG1 + WLAN/BT	SPLSR
Ant Combination	SAR	Position	SAR	Position			
Ant A-Ant G	2.238	-55.500	2.573	54.200	2.047	See Note 2	0.096
Ant B-Ant G	2.341	-55.200	2.573	54.200	2.047	See Note 2	0.100
Ant C-Ant G	0.509	-54.700	2.573	54.200	2.047	See Note 2	0.050

Notes:

- For all combinations where the sum of AG0+AG1+WLAN/BT is less than 4W/kg, there's no further analysis required for compliance demonstration.
- No evaluation was performed to determine the aggregate 10g SAR for these configurations as the SPLS ratio between the antenna pairs was not greater than 0.10 per FCC KDB 447498 D01v06. Please see Section D.7 for Y-axis peak locations.

FCC ID A3LSMS901U	 PCTEST Proud to be part of 	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 10 of 16

D.7 Highest Report SAR and SAR Hotspot Locations

As a conservative assessment, the distances between AG0 and AG1 were determined using the y-axis coordinates of the peak locations only (assumes 0 mm separation on x/z axis)

Table D-16
DSI=2 Right Cheek Peak Y Coordinates

		AG0	AG1
		A	G
Mode/Band	Distance (mm)	0	0
GSM 850	SAR	0.141	
	Y-Axis	-72.690	
GSM 1900	SAR	0.068	
	Y-Axis	-55.750	
UMTS 850	SAR	0.342	
	Y-Axis	-70.830	
UMTS 1750	SAR	0.124	
	Y-Axis	-77.480	
UMTS 1900	SAR	0.143	
	Y-Axis	-79.200	
LTE Band 71	SAR	0.158	
	Y-Axis	-74.860	
LTE Band 12	SAR	0.208	
	Y-Axis	-72.290	
LTE Band 13	SAR	0.243	
	Y-Axis	-70.820	
LTE Band 14	SAR	0.267	
	Y-Axis	-64.290	
LTE Band 26 (Cell)	SAR	0.254	
	Y-Axis	-67.860	
LTE Band 5 (Cell)	SAR	0.350	
	Y-Axis	-64.590	
LTE Band 66 (AWS)	SAR	0.155	
	Y-Axis	-80.380	
LTE Band 25 (PCS)	SAR	0.157	
	Y-Axis	-50.450	
LTE Band 30	SAR	0.085	
	Y-Axis	-53.800	
LTE Band 48	SAR		0.762
	Y-Axis		-17.120
NR Band n71	SAR	0.218	
	Y-Axis	-65.640	
NR Band n12	SAR	0.282	
	Y-Axis	-64.150	
NR Band n5 (Cell)	SAR	0.340	
	Y-Axis	-63.060	
NR Band n66 (AWS)	SAR	0.162	
	Y-Axis	-81.940	
NR Band n25 (PCS)	SAR	0.183	
	Y-Axis	-82.650	
NR Band n30	SAR	0.121	
	Y-Axis	-48.360	
NR Band n77 DoD	SAR		0.689
	Y-Axis		-18.090
NR Band n77	SAR		0.756
	Y-Axis		-16.410

FCC ID A3LSMS901U	 PCTEST Proud to be part of 	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 11 of 16

Table D-17
DSI=2 Left Cheek Peak Y Coordinates

		AG0		AG1
		A	B	F
Mode/Band	Distance (mm)	0	0	0
GSM 850	SAR	0.132		
	Y-Axis	-63.110		
GSM 1900	SAR	0.124		
	Y-Axis	-73.820		
UMTS 850	SAR	0.269		
	Y-Axis	-63.050		
UMTS 1750	SAR	0.227		
	Y-Axis	-70.440		
UMTS 1900	SAR	0.258		
	Y-Axis	-71.720		
LTE Band 71	SAR	0.156		
	Y-Axis	-77.140		
LTE Band 12	SAR	0.226		
	Y-Axis	-75.460		
LTE Band 13	SAR	0.235		
	Y-Axis	-64.790		
LTE Band 14	SAR	0.204		
	Y-Axis	-64.790		
LTE Band 26 (Cell)	SAR	0.208		
	Y-Axis	-63.130		
LTE Band 5 (Cell)	SAR	0.266		
	Y-Axis	-58.070		
LTE Band 66 (AWS)	SAR	0.330		
	Y-Axis	-76.520		
LTE Band 25 (PCS)	SAR	0.299		
	Y-Axis	-71.740		
LTE Band 30	SAR	0.082		
	Y-Axis	-74.730		
LTE Band 30	SAR		0.051	
	Y-Axis		-67.330	
LTE Band 7	SAR		0.070	
	Y-Axis		-92.510	
LTE Band 41	SAR		0.129	
	Y-Axis		-73.270	
NR Band n71	SAR	0.211		
	Y-Axis	-73.400		
NR Band n12	SAR	0.289		
	Y-Axis	-64.370		
NR Band n5 (Cell)	SAR	0.323		
	Y-Axis	-57.050		
NR Band n66 (AWS)	SAR	0.294		
	Y-Axis	-75.960		
NR Band n25 (PCS)	SAR	0.339		
	Y-Axis	-75.860		
NR Band n30	SAR	0.323		
	Y-Axis	-70.780		
NR Band n30	SAR		0.074	
	Y-Axis		-76.140	
NR Band n7	SAR		0.116	
	Y-Axis		-73.450	
NR Band n66 (AWS)	SAR			0.679
	Y-Axis			3.930
NR Band n25 (PCS)	SAR			0.615
	Y-Axis			3.260
NR Band n30	SAR			0.781
	Y-Axis			3.940
NR Band n41	SAR			0.983
	Y-Axis			2.440
NR Band n41	SAR		0.055	
	Y-Axis		-76.110	

FCC ID A3LSMS901U	 PCTEST Proud to be part of element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 12 of 16

Table D-18
DSI=0 Body-worn Peak Y Coordinates

		AG0	AG1	
		A	F	G
Mode/Band	Distance (mm)	15	15	15
GSM 850	SAR	0.189		
	Y-Axis	-7.000		
GSM 1900	SAR	0.285		
	Y-Axis	-73.500		
UMTS 850	SAR	0.360		
	Y-Axis	-39.000		
UMTS 1750	SAR	1.085		
	Y-Axis	-75.000		
UMTS 1900	SAR	1.024		
	Y-Axis	-72.000		
LTE Band 71	SAR	0.286		
	Y-Axis	-52.500		
LTE Band 12	SAR	0.322		
	Y-Axis	-45.000		
LTE Band 13	SAR	0.375		
	Y-Axis	-45.000		
LTE Band 14	SAR	0.363		
	Y-Axis	-45.000		
LTE Band 26 (Cell)	SAR	0.295		
	Y-Axis	0.000		
LTE Band 5 (Cell)	SAR	0.344		
	Y-Axis	-39.000		
LTE Band 66 (AWS)	SAR	1.151		
	Y-Axis	-75.000		
LTE Band 25 (PCS)	SAR	1.007		
	Y-Axis	-75.000		
LTE Band 30	SAR	0.373		
	Y-Axis	-70.000		
LTE Band 48	SAR			0.135
	Y-Axis			59.000
NR Band n71	SAR	0.403		
	Y-Axis	-48.600		
NR Band n12	SAR	0.444		
	Y-Axis	-42.000		
NR Band n5 (Cell)	SAR	0.447		
	Y-Axis	-42.000		
NR Band n66 (AWS)	SAR	0.952		
	Y-Axis	-76.500		
NR Band n66 (AWS)	SAR		0.218	
	Y-Axis		69.000	
NR Band n25 (PCS)	SAR	0.858		
	Y-Axis	-73.500		
NR Band n25 (PCS)	SAR		0.130	
	Y-Axis		66.500	
NR Band n30	SAR	0.721		
	Y-Axis	-63.200		
NR Band n30	SAR		0.261	
	Y-Axis		68.500	
NR Band n41	SAR		0.186	
	Y-Axis		53.000	
NR Band n77 DoD	SAR			0.104
	Y-Axis			64.000
NR Band n77	SAR			0.120
	Y-Axis			55.000

FCC ID A3LSMS901U	 PCTEST Proud to be part of element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 13 of 16

Table D-19
DSI=3 Back Side Peak Y Coordinates

Mode/Band	Distance (mm)	AG0		AG1			
		A	B	E	F	G	H
		10	10	10	10	10	10
GSM 850	SAR	0.383					
	Y-Axis	-58.500					
GSM 1900	SAR	0.336					
	Y-Axis	-73.500					
UMTS 850	SAR	0.550					
	Y-Axis	-58.500					
UMTS 1750	SAR	0.505					
	Y-Axis	-75.000					
UMTS 1900	SAR	0.511					
	Y-Axis	-73.500					
LTE Band 71	SAR	0.413					
	Y-Axis	-55.500					
LTE Band 12	SAR	0.518					
	Y-Axis	-57.000					
LTE Band 13	SAR	0.550					
	Y-Axis	-57.000					
LTE Band 14	SAR	0.503					
	Y-Axis	-57.000					
LTE Band 26 (Cell)	SAR	0.458					
	Y-Axis	-57.000					
LTE Band 5 (Cell)	SAR	0.622					
	Y-Axis	-58.500					
LTE Band 66 (AWS)	SAR	0.676					
	Y-Axis	-73.500					
LTE Band 25 (PCS)	SAR	0.689					
	Y-Axis	-75.000					
LTE Band 30	SAR	0.342					
	Y-Axis	-69.000					
LTE Band 30	SAR		0.164				
	Y-Axis		-69.500				
LTE Band 7	SAR		0.309				
	Y-Axis		-67.500				
LTE Band 48	SAR					0.218	
	Y-Axis					52.500	
LTE Band 41	SAR		0.303				
	Y-Axis		-55.600				
NR Band n71	SAR	0.599					
	Y-Axis	-55.500					
NR Band n12	SAR	0.659					
	Y-Axis	-57.000					
NR Band n5 (Cell)	SAR	0.731					
	Y-Axis	-66.000					
NR Band n66 (AWS)	SAR	0.592					
	Y-Axis	-75.000					
NR Band n25 (PCS)	SAR	0.633					
	Y-Axis	-78.000					
NR Band n30	SAR	0.481					
	Y-Axis	-68.900					
NR Band n30	SAR		0.085				
	Y-Axis		-66.000				
NR Band n7	SAR		0.358				
	Y-Axis		-69.800				
NR Band n66 (AWS)	SAR				0.333		
	Y-Axis				69.000		
NR Band n25 (PCS)	SAR				0.233		
	Y-Axis				70.500		
NR Band n30	SAR				0.528		
	Y-Axis				71.500		
NR Band n41	SAR				0.375		
	Y-Axis				55.200		
NR Band n41	SAR		0.161				
	Y-Axis		-75.500				
NR Band n41	SAR			0.044			
	Y-Axis			69.000			
NR Band n77 DoD	SAR					0.210	
	Y-Axis					53.000	
NR Band n77 DoD	SAR						0.111
	Y-Axis						56.000
NR Band n77	SAR					0.236	
	Y-Axis					52.900	
NR Band n77	SAR						0.185
	Y-Axis						52.000

FCC ID A3LSMS901U	 PCTEST Proud to be part of element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 14 of 16

Table D-20
DSI=0 Left Edge Max Phablet and DSI=1 Left Edge Reduced Phablet Peak Y Coordinates

		AG0			AG1
		A	B	C	G
Mode/Band	Distance (mm)	0	0	0	0
GSM 1900	SAR	0.724			
	Y-Axis	-66.000			
UMTS 1750	SAR	0.981			
	Y-Axis	-57.000			
UMTS 1900	SAR	0.977			
	Y-Axis	-66.000			
LTE Band 66 (AWS)	SAR	0.917			
	Y-Axis	-55.500			
LTE Band 25 (PCS)	SAR	1.251			
	Y-Axis	-61.500			
LTE Band 30	SAR	1.557			
	Y-Axis	-66.000			
LTE Band 30	SAR		1.490		
	Y-Axis		-55.600		
LTE Band 7	SAR		2.280		
	Y-Axis		-55.200		
LTE Band 41	SAR		2.187		
	Y-Axis		-56.000		
NR Band n66 (AWS)	SAR	0.697			
	Y-Axis	-57.000			
NR Band n25 (PCS)	SAR	1.528			
	Y-Axis	-60.000			
NR Band n30	SAR	2.238			
	Y-Axis	-57.400			
NR Band n30	SAR		1.234		
	Y-Axis		-66.400		
NR Band n7	SAR		2.341		
	Y-Axis		-60.700		
NR Band n77 DoD	SAR				2.496
	Y-Axis				54.200
NR Band n77	SAR				2.573
	Y-Axis				56.400
NR Band n77	SAR			0.509	
	Y-Axis			-54.700	

FCC ID A3LSMS901U	 PCTEST Proud to be part of 	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 15 of 16

Table D-21
DSI=1 Back Side Reduced Phablet Peak Y Coordinates

		AG0		AG1	
		A	B	F	G
Mode/Band	Distance (mm)	0	0	0	0
GSM 1900	SAR	1.498			
	Y-Axis	-69.400			
UMTS 1750	SAR	2.470			
	Y-Axis	-71.600			
UMTS 1900	SAR	1.274			
	Y-Axis	-75.500			
LTE Band 66 (AWS)	SAR	1.458			
	Y-Axis	-75.000			
LTE Band 25 (PCS)	SAR	1.779			
	Y-Axis	-69.000			
LTE Band 30	SAR	2.795			
	Y-Axis	-67.300			
LTE Band 30	SAR		1.332		
	Y-Axis		-66.600		
LTE Band 7	SAR		2.466		
	Y-Axis		-70.000		
LTE Band 41	SAR		1.830		
	Y-Axis		-68.900		
NR Band n66 (AWS)	SAR	2.135			
	Y-Axis	-75.000			
NR Band n25 (PCS)	SAR	2.309			
	Y-Axis	-67.500			
NR Band n30	SAR	2.912			
	Y-Axis	-68.400			
NR Band n30	SAR		1.442		
	Y-Axis		-65.600		
NR Band n7	SAR		3.085		
	Y-Axis		-68.300		
NR Band n41	SAR			0.952	
NR Band n77 DoD	SAR				0.940
	Y-Axis				57.700
NR Band n77	SAR				1.352
	Y-Axis				55.700

D.8 Conclusion

The above SPLSR criteria for all of the combinations of sub6 antenna groups is demonstrated to show that AG0 is mutually exclusive from AG1. Additional analysis for simultaneous analysis for the antenna groups and WIFI/BT antennas compliance demonstration is included in Appendix E

FCC ID A3LSMS901U	 PCTEST Proud to be part of element	SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 09/12/21 – 11/08/21	DUT Type: Portable Handset			APPENDIX D: Page 16 of 16