

APPENDIX E: MULTI-TX AND ANTENNA SAR CONSIDERATIONS

E.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D04v01 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter

E.2 Simultaneous Transmission 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 the 1g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. 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 (“-”).

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.

This device is enabled with Samsung S.LSI TAS (Time Average SAR) with pre-defined sub6 antenna groups (AG0 and AG1). Simultaneous transmission analysis is performed per antenna groups. Analysis demonstrates:

1. The mutually exclusive operation of AG0 and AG1
2. The compliance between AG0 and BT/WLAN/NFC/UWB/WPT, and between AG1 and BT/WLAN/NFC/UWB/WPT.

When operating in the same antenna group, Samsung S.LSI TAS algorithm in WWAN directly adds the time-averaged RF exposure from 4G and time-averaged RF exposure from 5G NR. S.LSI algorithm controls the total RF exposure from both 4G and 5G NR to not exceed FCC limit. Therefore, simultaneous transmission compliance between 4G+5G operations within an antenna group is demonstrated in the Part 2 Report during algorithm validation.

E.3 Sub6 Antenna Groups

The Samsung S.LSI TAS 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 either of the below conditions for all exposure scenarios:

1. Each antenna combination from both sub6 AGs sums less than the manufacture's design target
2. If the sum for antenna combination is greater than SAR design target, then that combination meets SPLSR criteria (Section 4.3.2(c) in FCC KDB 447498 D04v01).

These criterion 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 3 antennas (E, F, H). It also supports three WIFI Antennas (E, G, and I) that operate using Qualcomm FastConnect TAS. There are an additional 2 BT antennas, 1 NFC, 1 WPT, and 1 UWB

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antenna outside of Time-averaged SAR. It is demonstrated that AG0 is fully uncorrelated to AG1 through the following criteria:

- A. For each antenna, obtain the highest reported SAR for each of the supported technologies and bands. Using these values, demonstrate for a given position in an exposure condition that every antenna from one sub6 AG with every antenna in another sub6 AG for all frequency bands sums to be less than or equal to the manufacture's design target. If the sum for any pair is greater than the design target, obtain the peak SAR locations and demonstrate that SPLSR criteria are met for the position. This criterion must be demonstrated for all antenna pair combinations according to simultaneous transmission scenarios.

The following formula is used to calculate the SPLSR between antenna pair for each exposure configuration:

$$SPLSR = \frac{(SAR_i + SAR_j)^{1.5}}{\sqrt{(x_i - x_j)^2 + (y_i - y)^2 + (z_i - z_j)^2}}$$

Where i and j are bands/modes that can transmit simultaneously across AG0 and AG1, with x/y/z coordinates.

- B. If SPLSR is > 0.04 for 1g or 0.1 for 10g, Volume Scan is done for the pair. If Volume Scan is passing FCC limit, the two antennas are considered fully uncoupled. If not, the two antennas would be considered as fully coupled.

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 ("-"). For top edge, AG0 testing was excluded and for bottom edge AG1 testing was excluded, therefore, no spatial analysis required for those edges. For left and right edges, not every band was tested, therefore, not every combination between AG0 and AG1 was evaluated.

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 document was required to determine that possible simultaneous transmission scenarios would not exceed the SAR limit.

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E.4 Head SAR Antenna Group Analysis

Table E-1
Held-to-ear AG0 Highest Reported SAR

AG0 Reported 1g SAR [W/kg]						
	Configuration	A	B	C	D	Max
Head	Right Cheek	0.187	0.065	0.017	0.000	0.187
	Right Tilt	0.108	0.049	0.045	0.000	0.108
	Left Cheek	0.246	0.152	0.042	0.004	0.246
	Left Tilt	0.154	0.049	0.015	0.014	0.154

Table E-2
Held-to-ear AG1 Highest Reported SAR

AG1 1g Reported SAR[W/kg]					
	Configuration	E	F	H	Max
Head	Right Cheek	0.731	0.730	0.378	0.731
	Right Tilt	0.736	0.886	0.003	0.886
	Left Cheek	0.826	0.422	0.086	0.826
	Left Tilt	0.847	0.545	0.000	0.847

Table E-3
AG0 + AG1 Held-to-ear AG Verification

Head	Configuration	AG0 Reported 1g SAR [W/kg]	AG1 Reported 1g SAR [W/kg]	AG0 + AG1 Reported 1g SAR [W/kg]
	Right Cheek	0.187	0.731	0.918
	Right Tilt	0.108	0.886	0.994
	Left Cheek	0.246	0.826	See Table Below
	Left Tilt	0.154	0.847	See Table Below

Table E-4
Left Cheek Sum and SPLSR

AG0 Band/Antenna	AG1 Band/Antenna	AG0 SAR	AG1 SAR	Standalone Sum SAR	Distance (mm)	SPLSR
AG0: Ant A_LTE Band 66	AG1: Ant E_NR Band n26	0.214	0.826	1.04	89.14	0.01
AG0: Ant A_NR Band n66	AG1: Ant E_NR Band n26	0.246	0.826	1.072	91.26	0.01
AG0: Ant A_UMTS 1750	AG1: Ant E_NR Band n26	0.179	0.826	1.005	92.88	0.01
AG0: Ant A_NR Band n66	AG1: Ant E_NR Band n41	0.246	0.742	0.988	95.45	N/A

Table E-5
Left Tilt Sum and SPLSR

AG0 Band/Antenna	AG1 Band/Antenna	AG0 SAR	AG1 SAR	Standalone Sum SAR	Distance (mm)	SPLSR
AG0: Ant A_NR Band n66	AG1: Ant E_NR Band n12	0.154	0.847	1.001	25.62	0.04
AG0: Ant A_NR Band n26	AG1: Ant E_NR Band n12	0.121	0.847	0.968	32.18	N/A

Notes:

1. For Right Cheek and Right Tilt, since the worst case sum of all AG combinations are under 1 W/kg, the AGs are considered fully uncoupled and no further analysis is needed
2. No evaluation was performed to determine the aggregate 1g SAR for these configurations as the SPLSR ratio between the antenna pairs was not greater than 0.04 per FCC KDB 447498 D04v01. Please see the Highest Report SAR and Hotspot Location Section for peak locations
3. The light gray highlighted row shows the worst case sum of all AG combinations under 1W/kg. Since the sum of these combinations is less than or equal to 1 W/kg (SAR design target for this EUT), therefore no further analysis is needed.
4. Since either the sum of all AG combinations is less than or equal to 1W/kg or SPLSR is less or equal to 0.04, the AGs are considered fully uncoupled and no further analysis is needed.

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E.5 Body SAR Antenna Group Analysis

Table E-6
RSI=0/2 Body AG0 Highest Reported SAR

AG0 Reported 1g SAR [W/kg]						
	Configuration	A	B	C	D	Max
Body	Back	1.195	0.786	0.951	0.914	1.195
	Front	1.190	0.415	0.338	0.119	1.190
	Top	-	-	-	-	-
	Bottom	1.147	0.266	0.068	0.066	1.147
	Right	0.347	-	-	0.011	0.347
	Left	0.225	0.220	0.266	-	0.266

Table E-7
RSI=0/2 Body AG1 Highest Reported SAR

AG1 Reported 1g SAR [W/kg]					
	Configuration	E	F	H	Max
Body	Back	0.932	0.917	0.481	0.932
	Front	0.675	0.833	0.357	0.833
	Top	0.281	0.675	-	0.675
	Bottom	-	-	-	-
	Right	0.264	-	-	0.264
	Left	-	0.142	0.066	0.142

Table E-8
AG0 + AG1 Body AG Verification

Body		AG0 Reported 1g SAR [W/kg]	AG1 Reported 1g SAR [W/kg]	AG0 + AG1 Reported 1g SAR [W/kg]
	Back	1.195	0.932	See Table Below
	Front	1.190	0.833	See Table Below
	Right	0.347	0.264	0.611
	Left	0.266	0.142	0.408

**Table E-9
Body Back and SPLSR**

AGD Band/Antenna	AGS Band/Antenna	AGD L&S	AGS L&S	Handset to Sum L&S	Distance (m)	SPLSR
AGD Ant A, GSM 1900	AGS Ant E, GSM 850	1.19	0.905	1.897	157.9	0.02
AGD Ant A, GSM 1900	AGS1 Ant E, LTE Band 12	1.19	0.598	1.788	166.81	0.01
AGD Ant A, GSM 1900	AGS2 Ant E, LTE Band 13	1.19	0.731	1.921	165.1	0.02
AGD Ant A, GSM 1900	AGS3 Ant E, LTE Band 17	1.19	0.932	2.122	183.19	0.02
AGD Ant A, GSM 1900	AGS4 Ant E, LTE Band 25	1.19	0.797	1.987	162.93	0.02
AGD Ant A, GSM 1900	AGS5 Ant E, NR Band n12	1.19	0.823	2.013	164.8	0.02
AGD Ant A, GSM 1900	AGS6 Ant E, NR Band n26	1.19	0.736	1.925	166.57	0.02
AGD Ant A, GSM 1900	AGS7 Ant E, NR Band n41	1.19	0.829	2.021	165.45	0.01
AGD Ant A, GSM 1900	AGS8 Ant E, UMTS 850	1.19	0.685	1.871	164.01	0.02
AGD Ant A, GSM 1900	AGS9 Ant F, LTE Band 25	1.19	0.706	1.898	158.57	0.02
AGD Ant A, GSM 1900	AGS10 Ant F, LTE Band 25	1.19	0.248	1.439	132.36	0.01
AGD Ant A, GSM 1900	AGS11 Ant F, LTE Band 66	1.19	0.743	1.931	163.59	0.02
AGD Ant A, GSM 1900	AGS12 Ant F, NR Band n25	1.19	0.917	2.101	164.46	0.02
AGD Ant A, GSM 1900	AGS13 Ant F, NR Band n41	1.19	0.758	1.948	163.19	0.02
AGD Ant A, GSM 1900	AGS14 Ant F, LTE Band n25	1.19	0.813	2.025	158.22	0.02
AGD Ant A, GSM 1900	AGS15 Ant F, NR Band n25	1.19	0.733	1.932	158.03	0.02
AGD Ant A, GSM 1900	AGS16 Ant F, UMTS 1750	1.19	0.633	1.823	163.35	0.02
AGD Ant A, GSM 1900	AGS17 Ant E, LTE Band 25	1.19	0.485	1.671	133.48	0.02
AGD Ant A, GSM 850	AGS18 Ant E, GSM 850	1.188	0.657	1.845	151.85	0.02
AGD Ant A, GSM 850	AGS19 Ant E, LTE Band 12	1.188	0.598	1.786	156.85	0.02
AGD Ant A, GSM 850	AGS20 Ant E, LTE Band 13	1.188	0.751	1.939	157.45	0.02
AGD Ant A, GSM 850	AGS21 Ant E, LTE Band 17	1.188	0.932	2.123	154.62	0.02
AGD Ant A, GSM 850	AGS22 Ant E, LTE Band 25	1.188	0.797	1.986	152.75	0.02
AGD Ant A, GSM 850	AGS23 Ant E, NR Band n12	1.188	0.823	2.011	154.7	0.02
AGD Ant A, GSM 850	AGS24 Ant E, NR Band n26	1.188	0.736	1.923	157.9	0.02
AGD Ant A, GSM 850	AGS25 Ant E, NR Band n41	1.188	0.829	2.022	157.52	0.01
AGD Ant A, GSM 850	AGS26 Ant E, UMTS 850	1.188	0.685	1.849	154.49	0.02
AGD Ant A, GSM 850	AGS27 Ant F, LTE Band 25	1.188	0.708	1.896	143.84	0.02
AGD Ant A, GSM 850	AGS28 Ant F, LTE Band 41	1.188	0.249	1.437	150.68	0.01
AGD Ant A, GSM 850	AGS29 Ant F, UMTS 1750	1.188	0.485	1.669	131.4	0.02
AGD Ant A, GSM 850	AGS30 Ant F, NR Band n25	1.188	0.917	2.105	151.5	0.02
AGD Ant A, GSM 850	AGS31 Ant F, NR Band n41	1.188	0.758	1.946	150.01	0.02
AGD Ant A, GSM 850	AGS32 Ant F, NR Band n25	1.188	0.813	1.999	153.51	0.02
AGD Ant A, GSM 850	AGS33 Ant F, NR Band n77	1.188	0.732	1.92	144.45	0.02
AGD Ant A, GSM 850	AGS34 Ant F, UMTS 1750	1.188	0.633	1.829	147.7	0.02
AGD Ant A, GSM 850	AGS35 Ant E, NR Band n77	1.188	0.485	1.669	138.64	0.02
AGD Ant A, LTE Band 12	AGS1 Ant E, GSM 850	1.182	0.657	1.839	153.16	0.02
AGD Ant A, LTE Band 12	AGS2 Ant E, LTE Band 13	1.182	0.598	1.778	158.06	0.02
AGD Ant A, LTE Band 12	AGS3 Ant E, LTE Band 13	1.182	0.751	1.933	158.94	0.02
AGD Ant A, LTE Band 12	AGS4 Ant E, LTE Band 17	1.182	0.932	2.124	156.47	0.02
AGD Ant A, LTE Band 12	AGS5 Ant E, LTE Band 25	1.182	0.797	1.979	153.88	0.02
AGD Ant A, LTE Band 12	AGS6 Ant E, NR Band n12	1.182	0.823	2.005	153.67	0.02
AGD Ant A, LTE Band 12	AGS7 Ant E, NR Band n26	1.182	0.736	1.927	158.68	0.02
AGD Ant A, LTE Band 12	AGS8 Ant E, NR Band n41	1.182	0.822	2.004	159.38	0.01
AGD Ant A, LTE Band 12	AGS9 Ant E, UMTS 850	1.182	0.685	1.849	156.81	0.02
AGD Ant A, LTE Band 12	AGS10 Ant F, LTE Band 25	1.182	0.708	1.89	144.46	0.02
AGD Ant A, LTE Band 12	AGS11 Ant F, LTE Band 41	1.182	0.249	1.435	152.7	0.01
AGD Ant A, LTE Band 12	AGS12 Ant F, LTE Band 66	1.182	0.743	1.933	162.45	0.02
AGD Ant A, LTE Band 12	AGS13 Ant F, NR Band n25	1.182	0.917	2.099	152.45	0.02
AGD Ant A, LTE Band 12	AGS14 Ant F, NR Band n41	1.182	0.758	1.94	150.01	0.02
AGD Ant A, LTE Band 12	AGS15 Ant F, NR Band n77	1.182	0.813	1.993	152.39	0.02
AGD Ant A, LTE Band 12	AGS16 Ant F, UMTS 1750	1.182	0.732	1.924	146.2	0.02
AGD Ant A, LTE Band 12	AGS17 Ant F, UMTS 1750	1.182	0.633	1.813	148.02	0.02
AGD Ant A, LTE Band 12	AGS18 Ant E, NR Band n77	1.182	0.485	1.663	138.11	0.02
AGD Ant A, LTE Band 13	AGS19 Ant E, GSM 850	0.763	0.657	1.42	148.38	0.01
AGD Ant A, LTE Band 13	AGS20 Ant E, LTE Band 12	0.763	0.598	1.357	153.24	0.01
AGD Ant A, LTE Band 13	AGS21 Ant E, LTE Band 13	0.763	0.751	1.524	154.15	0.01
AGD Ant A, LTE Band 13	AGS22 Ant E, LTE Band 17	0.763	0.932	1.793	150.39	0.01
AGD Ant A, LTE Band 13	AGS23 Ant E, LTE Band 25	0.763	0.797	1.55	148.14	0.01
AGD Ant A, LTE Band 13	AGS24 Ant E, NR Band n12	0.763	0.823	1.586	148.15	0.01
AGD Ant A, LTE Band 13	AGS25 Ant E, NR Band n26	0.763	0.736	1.498	153.94	0.01
AGD Ant A, LTE Band 13	AGS26 Ant E, NR Band n41	0.763	0.822	1.485	153.01	0.01
AGD Ant A, LTE Band 13	AGS27 Ant E, UMTS 850	0.763	0.685	1.424	149.3	0.01
AGD Ant A, LTE Band 13	AGS28 Ant F, LTE Band 25	0.763	0.708	1.475	148.3	0.01
AGD Ant A, LTE Band 13	AGS29 Ant F, LTE Band 41	0.763	0.249	1.423	149.23	0.01
AGD Ant A, LTE Band 13	AGS30 Ant F, LTE Band 66	0.763	0.743	1.504	145.02	0.01
AGD Ant A, LTE Band 13	AGS31 Ant F, NR Band n25	0.763	0.917	1.58	147.39	0.01
AGD Ant A, LTE Band 13	AGS32 Ant F, NR Band n41	0.763	0.758	1.535	147.93	0.01
AGD Ant A, LTE Band 13	AGS33 Ant F, NR Band n77	0.763	0.813	1.574	147.59	0.01
AGD Ant A, LTE Band 13	AGS34 Ant F, UMTS 1750	0.763	0.732	1.495	146.1	0.01
AGD Ant A, LTE Band 13	AGS35 Ant F, UMTS 1750	0.763	0.633	1.394	142.94	0.01
AGD Ant A, LTE Band 13	AGS36 Ant E, NR Band n77	0.763	0.485	1.244	130.92	0.01
AGD Ant A, LTE Band 25	AGS1 Ant E, GSM 850	0.885	0.651	1.549	158.38	0.01
AGD Ant A, LTE Band 25	AGS2 Ant E, LTE Band 12	0.886	0.598	1.48	164.18	0.01
AGD Ant A, LTE Band 25	AGS3 Ant E, LTE Band 13	0.886	0.751	1.637	164.77	0.01
AGD Ant A, LTE Band 25	AGS4 Ant E, LTE Band 17	0.886	0.932	1.838	160.95	0.02
AGD Ant A, LTE Band 25	AGS5 Ant E, NR Band n12	0.886	0.823	1.655	160.54	0.01
AGD Ant A, LTE Band 25	AGS6 Ant E, NR Band n26	0.886	0.736	1.559	160.74	0.01
AGD Ant A, LTE Band 25	AGS7 Ant E, NR Band n41	0.886	0.739	1.625	160	0.01
AGD Ant A, LTE Band 25	AGS8 Ant E, NR Band n77	0.886	0.523	1.408	146.17	0.01
AGD Ant A, LTE Band 25	AGS9 Ant E, UMTS 850	0.886	0.685	1.547	161.5	0.01
AGD Ant A, LTE Band 25	AGS10 Ant F, LTE Band 25	0.886	0.708	1.524	156.21	0.01
AGD Ant A, LTE Band 25	AGS11 Ant F, LTE Band 41	0.886	0.249	1.255	137.25	0.01
AGD Ant A, LTE Band 25	AGS12 Ant F, LTE Band 66	0.886	0.743	1.627	159.61	0.01
AGD Ant A, LTE Band 25	AGS13 Ant F, NR Band n25	0.886	0.917	1.803	158.03	0.02
AGD Ant A, LTE Band 25	AGS14 Ant F, NR Band n41	0.886	0.758	1.644	155.66	0.01
AGD Ant A, LTE Band 25	AGS15 Ant F, NR Band n77	0.886	0.813	1.687	156.9	0.01
AGD Ant A, LTE Band 25	AGS16 Ant F, UMTS 1750	0.886	0.732	1.618	154.38	0.01
AGD Ant A, LTE Band 25	AGS17 Ant F, UMTS 1750	0.886	0.633	1.527	156.82	0.01
AGD Ant A, LTE Band 25	AGS18 Ant E, NR Band n77	0.886	0.485	1.367	137.12	0.01
AGD Ant A, LTE Band 26	AGS19 Ant E, GSM 850	0.813	0.657	1.47	146.15	0.01
AGD Ant A, LTE Band 26	AGS20 Ant E, LTE Band 12	0.813	0.598	1.407	158.06	0.01
AGD Ant A, LTE Band 26	AGS21 Ant E, LTE Band 13	0.813	0.751	1.584	150.92	0.01
AGD Ant A, LTE Band 26	AGS22 Ant E, LTE Band 17	0.813	0.932	1.745	148.13	0.02
AGD Ant A, LTE Band 26	AGS23 Ant E, LTE Band 25	0.813	0.797	1.43	146.92	0.01
AGD Ant A, LTE Band 26	AGS24 Ant E, NR Band n12	0.813	0.823	1.636	147.93	0.01
AGD Ant A, LTE Band 26	AGS25 Ant E, NR Band n26	0.813	0.736	1.448	156.7	0.01
AGD Ant A, LTE Band 26	AGS26 Ant E, NR Band n41	0.813	0.822	1.535	151.75	0.01
AGD Ant A, LTE Band 26	AGS27 Ant E, UMTS 850	0.813	0.685	1.474	147.8	0.01
AGD Ant A, LTE Band 26	AGS28 Ant F, LTE Band 25	0.813	0.708	1.523	156.25	0.01
AGD Ant A, LTE Band 26	AGS29 Ant F, LTE Band 41	0.813	0.249	1.062	148.55	0.01
AGD Ant A, LTE Band 26	AGS30 Ant F, LTE Band 66	0.813	0.743	1.604	156.24	0.01
AGD Ant A, LTE Band 26	AGS31 Ant F, NR Band n25	0.813	0.917	1.73	144.26	0.02
AGD Ant A, LTE Band 26	AGS32 Ant F, NR Band n41	0.813	0.758	1.571	145.61	0.01
AGD Ant A, LTE Band 26	AGS33 Ant F, NR Band n77	0.813	0.813	1.624	147.93	0.01
AGD Ant A, LTE Band 26	AGS34 Ant F, UMTS 1750	0.813	0.732	1.545	137	0.01
AGD Ant A, LTE Band 26	AGS35 Ant F, UMTS 1750	0.813	0.633	1.444	139.93	0.01
AGD Ant A, LTE Band 26	AGS36 Ant E, NR Band n77	0.813	0.485	1.294	97.81	0.02
AGD Ant A, LTE Band 46	AGS1 Ant E, GSM 850	0.85	0.657	1.507	153.64	0.01
AGD Ant A, LTE Band 46	AGS2 Ant E, LTE Band 13	0.85	0.598	1.444	159.85	0.01
AGD Ant A, LTE Band 46	AGS3 Ant E, LTE Band 13	0.85	0.751	1.603	161.53	0.01
AGD Ant A, LTE Band 46	AGS4 Ant E, LTE Band 17	0.85	0.932	1.781	157.68	0.02
AGD Ant A, LTE Band 46	AGS5 Ant E, NR Band n26	0.85	0.797	1.647	157.02	0.01
AGD Ant A, LTE Band 46	AGS6 Ant E, NR Band n41	0.85	0.823	1.673	158.77	0.01
AGD Ant A, LTE Band 46	AGS7 Ant E, NR Band n77	0.85	0.736	1.589	160.74	0.01
AGD Ant A, LTE Band 46	AGS8 Ant E, UMTS 850	0.85	0.522	1.372	138.68	0.01
AGD Ant A, LTE Band 46	AGS9 Ant E, UMTS 850	0.85	0.685	1.511	168.26	0.01
AGD Ant A, LTE Band 66	AGS10 Ant F, LTE Band 25	0.85	0.708	1.558	151.39	0.01
AGD Ant A, LTE Band 66	AGS11 Ant F, LTE Band 41	0.85	0.249	1.099	136.1	0.01
AGD Ant A, LTE Band 66	AGS12 Ant F, LTE Band 66	0.85	0.743	1.595	156.57	0.01
AGD Ant A, LTE Band 66	AGS13 Ant F, NR Band n25	0.85	0.917	1.787	157.89	0.01
AGD Ant A, LTE Band 66	AGS14 Ant F, NR Band n41	0.85	0.758	1.608	156.24	0.01
AGD Ant A, LTE Band 66	AGS15 Ant F, NR Band n77	0.85	0.813	1.681	157.72	0.01
AGD Ant A, LTE Band 66	AGS16 Ant F, UMTS 1750	0.85	0.732	1.582	153.52	0.01
AGD Ant A, LTE Band 66	AGS17 Ant F, UMTS 1750	0.85	0.633	1.481	153.75	0.01
AGD Ant A, LTE Band 66	AGS18 Ant E, NR Band n77	0.85	0.485	1.331	134.25	0.01
AGD Ant A, NR Band n12	AGS19 Ant E, GSM 850	0.993	0.651	1.65	156.54	0.01
AGD Ant A, NR Band n12	AGS20 Ant E, LTE Band 12	0.993	0.598	1.587	161.51	0.01
AGD Ant A, NR Band n12	AGS21 Ant E, LTE Band 13	0.993	0.751	1.748	162.84	0.01
AGD Ant A, NR Band n12	AGS22 Ant E, LTE Band 17	0.993	0.932	1.925	158.12	0.02
AGD Ant A, NR Band n12	AGS23 Ant E, LTE Band 25	0.993	0.797	1.79	157.44	0.02
AGD Ant A, NR Band n12	AGS24 Ant E, NR Band n12	0.993	0.823	1.836	159.4	0.02
AGD Ant A, NR Band n12	AGS25 Ant E, NR Band n26	0.993	0.736	1.738	162.01	0.01
AGD Ant A, NR Band n12	AGS26 Ant E, NR Band n41	0.993	0.822	1.835	162.8	0.01
AGD Ant A, NR Band n12	AGS27 Ant E, UMTS 850	0.993	0.685	1.624	160.19	0.01
AGD Ant A, NR Band n12	AGS28 Ant F, LTE Band 25	0.993	0.708	1.705	148.57	0.01
AGD Ant A, NR Band n12	AGS29 Ant F, LTE Band 41	0.993	0.249	1.042	136.53	0.01
AGD Ant A, NR Band n12	AGS30 Ant F, LTE Band 66	0.993	0.743	1.734	154	0.01
AGD Ant A, NR Band n12	AGS31 Ant F, NR Band n25	0.993	0.917	1.755	154.5	0.01
AGD Ant A, NR Band n12	AGS32 Ant F, NR Band n41	0.993	0.813	1.804	156.13	0.02
AGD Ant A, NR Band n12	AGS33 Ant F, NR Band n77					

Table E-10
Body Back and SPLSR cont.

[illegible]

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Table E-11
Body Front and SPLSR

[illegible]

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Notes:

1. The light gray highlighted row shows the worst case sum of all AG combinations under 1W/kg. Since the sum of these combinations is less than or equal to 1 W/kg (SAR design target for this EUT), therefore no further analysis is needed.
2. Since either the sum of all AG combinations is less than or equal to 1W/kg or SPLSR is less or equal to 0.04, the AGs are considered fully uncoupled and no further analysis is needed.
3. Because body-worn back combinations are completely identical to hotspot back combinations for AG0 and AG1, they were combined into one simultaneous transmission analysis section.

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E.6 Head SAR Simultaneous Transmission Analysis

Table E-12
Held-to-ear WLAN/BT Highest Reported SAR

Configuration	2.4 GHz WIFI Ant G SAR (W/kg)	2.4 GHz WIFI Ant I SAR (W/kg)	2.4 GHz WIFI MIMO SAR (W/kg)	Worst Case 2.4 GHz WIFI SAR (W/kg)	5 GHz WIFI Ant G SAR (W/kg)	5 GHz WIFI Ant E SAR (W/kg)	5 GHz WIFI MIMO SAR (W/kg)	Worst Case 5 GHz WIFI SAR (W/kg)	6 GHz WIFI Ant G SAR (W/kg)	6 GHz WIFI Ant E SAR (W/kg)	6 GHz WIFI MIMO SAR (W/kg)	Worst Case 6 GHz WIFI SAR (W/kg)	Bluetooth Ant G SAR (W/kg)	Bluetooth Ant I SAR (W/kg)	Bluetooth MIMO SAR (W/kg)	Worst Case Bluetooth SAR (W/kg)
	1a	1b	1c	1d	2a	2b	2c	2d	3a	3b	3c	3d	4a	4b	4c	4d
Right Cheek	0.465	0.272	0.461	0.465	0.368	0.127	0.400	0.400	0.158	0.148	0.211	0.211	0.460	0.135	0.344	0.460
Right Tilt	0.154	0.039	0.175	0.175	0.181	0.118	0.211	0.211	0.039	0.136	0.166	0.166	0.235	0.023	0.137	0.235
Left Cheek	0.102	0.517	0.448	0.517	0.056	0.151	0.192	0.192	0.031	0.166	0.171	0.171	0.130	0.242	0.216	0.242
Left Tilt	0.051	0.069	0.080	0.080	0.028	0.161	0.183	0.183	0.006	0.162	0.151	0.162	0.058	0.042	0.050	0.058

Configuration	2.4 GHz WIFI Ant I + Bluetooth Ant G SAR (W/kg)	Worst Case 2.4 GHz WIFI SAR (W/kg)	Worst Case 5 GHz WIFI + Worst Case Bluetooth SAR (W/kg)	Worst Case 6 GHz WIFI + Worst Case Bluetooth SAR (W/kg)	WLAN/BT Worst-case Combination SAR (W/kg)
	1b+4a	1d	2d+4d	3d+4d	
Right Cheek	0.732	0.465	0.860	0.671	0.860
Right Tilt	0.274	0.175	0.446	0.401	0.446
Left Cheek	0.647	0.517	0.434	0.413	0.647
Left Tilt	0.127	0.080	0.241	0.220	0.241

Table E-13
Held-to-ear UWB Highest Reported SAR

	Configuration	UWB SAR (W/kg)
Head SAR	Right Cheek	0.000
	Right Tilt	0.003
	Left Cheek	0.001
	Left Tilt	0.002

Table E-14
Simultaneous Transmission Scenarios of WLAN/BT (Held to Ear)

Head SAR	Configuration	AG0 SAR (W/kg)	AG1 SAR (W/kg)	UWB SAR (W/kg)	WLAN/BT Worst-case Combination SAR (W/kg)	AG0 + WLAN/BT + UWB SAR (W/kg)	AG1 + WLAN/BT + UWB SAR (W/kg)
	Right Cheek	0.187	0.731	0.000	0.860	1.047	1.591
	Right Tilt	0.108	0.886	0.003	0.446	0.557	1.335
	Left Cheek	0.246	0.826	0.001	0.647	0.894	1.474
	Left Tilt	0.154	0.847	0.002	0.241	0.397	1.090

Notes:

- For all combinations where the SAR sum of AG0/AG1 + WLAN + BT+UWB is not greater than 1.6, there's no further analysis required for compliance demonstration.

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E.7 Body SAR Simultaneous Transmission Analysis

Table E-15
Body WLAN/BT Highest Reported SAR

Configuration	2.4 GHz WIFI Ant G SAR (W/kg)	2.4 GHz WIFI Ant I SAR (W/kg)	2.4 GHz WIFI MIMO SAR (W/kg)	Worst Case 2.4 GHz WIFI SAR (W/kg)	5 GHz WIFI Ant G SAR (W/kg)	5 GHz WIFI Ant E SAR (W/kg)	5 GHz WIFI MIMO SAR (W/kg)	Worst Case 5 GHz WIFI SAR (W/kg)	6 GHz WIFI Ant G SAR (W/kg)	6 GHz WIFI Ant E SAR (W/kg)	6 GHz WIFI MIMO SAR (W/kg)	Worst Case 6 GHz WIFI SAR (W/kg)	Bluetooth Ant G SAR (W/kg)	Bluetooth Ant I SAR (W/kg)	Bluetooth MIMO SAR (W/kg)	Worst Case Bluetooth SAR (W/kg)
	1a	1b	1c	1d	2a	2b	2c	2d	3a	3b	3c	3d	4a	4b	4c	4d
Back	0.481	0.105	0.514	0.514	0.225	0.318	0.300	0.318	0.067	0.261	0.280	0.280	0.201	0.331	0.300	0.331
Front	0.236	0.253	0.376	0.376	0.130	0.076	0.170	0.170	0.053	0.053	0.081	0.081	0.494	-	-	0.494
Top	0.066	0.006	0.071	0.071	0.004	0.048	0.055	0.055	0.014	0.060	0.065	0.065	0.123	-	-	0.123
Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Right	-	0.044	0.077	0.077	-	0.005	0.000	0.005	-	0.000	0.000	0.000	-	-	-	-
Left	0.291	-	0.196	0.291	0.081	-	0.061	0.081	0.047	-	0.061	0.061	0.288	-	-	0.288

Configuration	2.4 GHz WIFI Ant I + Bluetooth Ant G SAR (W/kg)	Worst Case 2.4 GHz WIFI SAR (W/kg)	Worst Case 5 GHz WIFI + Worst Case Bluetooth SAR (W/kg)	Worst Case 6 GHz WIFI + Worst Case Bluetooth SAR (W/kg)	WLAN/BT Worst-case Combination SAR (W/kg)
	1b+4a	1d	2d+4d	3d+4d	
Back	0.306	0.514	0.649	0.611	0.649
Front	0.747	0.376	0.664	0.575	0.747
Top	0.129	0.071	0.178	0.188	0.188
Bottom	-	-	-	-	-
Right	0.044	0.077	0.005	0.000	0.077
Left	0.288	0.291	0.369	0.349	0.369

Table E-16
Body UWB Highest Reported SAR

	Configuration	UWB SAR (W/kg)
Body SAR	Back	0.001
	Front	-
	Top	-
	Bottom	-
	Right	-
	Left	-

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Table E-17
Simultaneous Transmission Scenarios of WLAN/BT (Body)

Body SAR	Configuration	AG0 SAR (W/kg)	AG1 SAR (W/kg)	UWB SAR (W/kg)	WLAN/BT Worst-case Combination SAR (W/kg)	AG0 + UWB + WLAN/BT SAR (W/kg)	AG1 + UWB + WLAN/BT SAR (W/kg)
	Back	1.195	0.932	0.001	0.649	See Table Below	1.582
	Front	1.190	0.833	-	0.747	See Table Below	1.580
	Top	-	0.675	-	0.188	0.188	0.863
	Bottom	1.147	-	-	-	1.147	-
	Right	0.347	0.264	-	0.077	0.424	0.341
	Left	0.266	0.142	-	0.369	0.635	0.511

Table E-18
Body Back and SPLSR

Back										
Bottom Set		Top Set						Bottom Set + Top Set Reported SAR	Bottom Set + Top Set Minimum Distance	SPLSR
AG0		WLAN		Bluetooth		UWB				
Reported SAR	Position	Reported SAR	Position	Reported SAR	Position	Reported SAR	Position			
1.195	58.5	0.514	-47.4	0.331	-34.6	0.001	-90.7	2.041	93.1	0.03

Table E-19
Body Front and SPLSR

Front								
Bottom Set		Top Set				Bottom Set + Top Set Reported SAR	Bottom Set + Top Set Minimum Distance	SPLSR
AG0		WLAN		Bluetooth				
Reported SAR	Position	Reported SAR	Position	Reported SAR	Position			
1.19	56.4	0.376	-42.1	0.494	-52.3	2.06	98.5	0.03

Notes:

1. For 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 D04v01. Please see the Highest Report SAR and Hotspot Location Section for peak locations.
2. For all combinations where the SAR sum of AG0/AG1 + WLAN + BT+UWB is not greater than 1.6, there's no further analysis required for compliance demonstration.
3. Body back SAR consists of the highest reported SAR between Body-worn back and Hotspot back.

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E.8 Phablet SAR Simultaneous Transmission 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 E-20
RSI=0/2 Phablet AG0 Highest Reported SAR

AG0 Reported 10g SAR [W/kg]				
	Configuration	A	B	Max
Phablet	Back	-	-	-
	Front	-	-	-
	Top	-	-	-
	Bottom	1.282	0.872	1.282
	Right	-	-	-
	Left	-	-	-

Table E-21
RSI=0/2 Max Phablet AG1 Highest Reported SAR

AG1 Reported 10g SAR [W/kg]			
	Configuration	F	Max
Phablet	Back	-	-
	Front	-	-
	Top	2.809	2.809
	Bottom	-	-
	Right	-	-
	Left	-	-

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Table E-22
Phablet WLAN/BT Highest Reported SAR

Configuration	5 GHz WIFI Ant G SAR (W/kg)	5 GHz WIFI Ant E SAR (W/kg)	5 GHz WIFI MIMO SAR (W/kg)	Worst Case 5 GHz WIFI SAR (W/kg)	6 GHz WIFI Ant G SAR (W/kg)	6 GHz WIFI Ant E SAR (W/kg)	6 GHz WIFI MIMO SAR (W/kg)	Worst Case 6 GHz WIFI SAR (W/kg)	Bluetooth Ant G SAR (W/kg)	Bluetooth Ant I SAR (W/kg)	Bluetooth MIMO SAR (W/kg)	Worst Case Bluetooth SAR (W/kg)
	2a	2b	2c	2d	3a	3b	3c	3d	4a	4b	4c	4d
Back	0.349	0.208	0.400	0.400	0.125	0.154	0.153	0.154	0.370	0.193	0.228	0.370
Front	0.335	0.137	0.316	0.335	0.073	0.030	0.094	0.094	0.274	0.906	0.577	0.906
Top	0.068	0.106	0.113	0.113	0.017	0.061	0.059	0.061	0.083	0.006	0.007	0.083
Bottom	-	-	-	-	-	-	-	-	-	-	-	-
Right	-	0.014	0.019	0.019	-	0.000	0.000	0.000	-	0.245	0.197	0.245
Left	0.474	-	0.541	0.541	0.195	-	0.220	0.220	0.747	-	0.006	0.747

Configuration	Worst Case 5 GHz WIFI + Worst Case Bluetooth SAR (W/kg)	Worst Case 6 GHz WIFI + Worst Case Bluetooth SAR (W/kg)	WLAN/BT Worst-case Combination SAR (W/kg)
	2d+4d	3d+4d	
Back	0.770	0.524	0.770
Front	1.241	1.000	1.241
Top	0.196	0.144	0.196
Bottom	-	-	-
Right	0.264	0.245	0.264
Left	1.288	0.967	1.288

Table E-23
Phablet NFC, WPT, UWB Highest Reported SAR

	Configuration	NFC Reported SAR (W/kg)	WPT Reported SAR (W/kg)	UWB Reported SAR (W/kg)
Phablet SAR	Back	0.012	0.000	0.000
	Front	0.000	0.000	0.000
	Top	0.000	0.000	0.001
	Bottom	0.000	0.000	0.000
	Right	0.000	0.000	0.002
	Left	0.000	0.000	0.000

Table E-24
Simultaneous Transmission Scenarios of WLAN/BT + UWB + WPT + NFC (Phablet)

Phablet SAR	Configuration	AG0 SAR (W/kg)	AG1 SAR (W/kg)	NFC Reported SAR (W/kg)	WPT Reported SAR (W/kg)	UWB Reported SAR (W/kg)	WLAN/BT Worst-case Combination SAR (W/kg)	AG0 + AG1 + WPT + NFC + UWB Ratio to Limit
	Back	-	-	0.012	0.000	0.000	0.770	0.782
	Front	-	-	0.000	0.000	0.000	1.241	1.241
	Top	-	2.809	0.000	0.000	0.001	0.196	3.006
	Bottom	1.282	-	0.000	0.000	0.000	-	1.282
	Right	-	-	0.000	0.000	0.002	0.264	0.266
	Left	-	-	0.000	0.000	0.000	1.288	1.288

Notes:

1. Please refer to the WPT report (SN: 1M2508270083-35.A3L) for the WPT SAR values.
2. For all combinations where the sum of AG0+AG1+WLAN/BT+UWB+NFC+WPT is less than 4.0, there's no further analysis required for compliance demonstration.

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E.9 Highest Report SAR and SAR Hotspot Locations

As a conservative assessment, the distances between Bottom Set and Top Set were determined using the coordinates of the peak locations (assumes 0 mm separation on z axis for Body only)

Table E-25
Head Right Cheek

Antenna Group	Antenna	Mode/Band	Reported SAR
AG0	A	GSM 850	0.126
AG1	E	GSM 850	0.605
AG0	A	GSM 1900	0.057
AG0	A	UMTS 850	0.136
AG1	E	UMTS 850	0.599
AG0	A	UMTS 1750	0.081
AG1	F	UMTS 1750	0.538
AG0	A	UMTS 1900	0.088
AG0	A	LTE Band 12	0.138
AG1	E	LTE Band 12	0.498
AG0	A	LTE Band 13	0.117
AG1	E	LTE Band 13	0.731
AG0	A	LTE Band 26	0.153
AG1	E	LTE Band 26	0.632
AG0	A	LTE Band 66	0.098
AG1	F	LTE Band 66	0.640
AG0	A	LTE Band 25	0.094
AG1	F	LTE Band 25	0.675
AG0	B	LTE Band 41	0.065
AG1	F	LTE Band 41	0.292
AG0	A	NR Band n12	0.159
AG1	E	NR Band n12	0.462
AG0	A	NR Band n26	0.187
AG1	E	NR Band n26	0.647
AG0	A	NR Band n66	0.094
AG1	F	NR Band n66	0.633
AG0	A	NR Band n25	0.124
AG1	F	NR Band n25	0.647
AG0	B	NR Band n41	0.044
AG0	D	NR Band n41	0.000
AG1	E	NR Band n41	0.332
AG1	F	NR Band n41	0.681
AG0	C	NR Band n77	0.017
AG0	D	NR Band n77	0.000
AG1	F	NR Band n77	0.730
AG1	H	NR Band n77	0.378

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Table E-26
Head Right Tilt

Antenna Group	Antenna	Mode/Band	Reported SAR
AG0	A	GSM 850	0.072
AG1	E	GSM 850	0.546
AG0	A	GSM 1900	0.033
AG0	A	UMTS 850	0.067
AG1	E	UMTS 850	0.537
AG0	A	UMTS 1750	0.054
AG1	F	UMTS 1750	0.567
AG0	A	UMTS 1900	0.072
AG0	A	LTE Band 12	0.070
AG1	E	LTE Band 12	0.434
AG0	A	LTE Band 13	0.067
AG1	E	LTE Band 13	0.525
AG0	A	LTE Band 26	0.100
AG1	E	LTE Band 26	0.477
AG0	A	LTE Band 66	0.064
AG1	F	LTE Band 66	0.730
AG0	A	LTE Band 25	0.078
AG1	F	LTE Band 25	0.886
AG0	B	LTE Band 41	0.049
AG1	F	LTE Band 41	0.391
AG0	A	NR Band n12	0.071
AG1	E	NR Band n12	0.568
AG0	A	NR Band n26	0.108
AG1	E	NR Band n26	0.736
AG0	A	NR Band n66	0.058
AG1	F	NR Band n66	0.874
AG0	A	NR Band n25	0.085
AG1	F	NR Band n25	0.676
AG0	B	NR Band n41	0.036
AG0	D	NR Band n41	0.000
AG1	E	NR Band n41	0.300
AG1	F	NR Band n41	0.872
AG0	C	NR Band n77	0.045
AG0	D	NR Band n77	0.000
AG1	F	NR Band n77	0.825
AG1	H	NR Band n77	0.003

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Table E-27
Head Left Cheek

Antenna Group	Antenna	Mode/Band	Reported SAR	X-Coord	Y-Coord	Z-Coord
AG0	A	GSM 850	0.117	68.0	249.7	-165.8
AG1	E	GSM 850	0.638	14.5	333.0	-168.9
AG0	A	GSM 1900	0.099	53.6	248.8	-169.2
AG0	A	UMTS 850	0.129	58.4	279.0	-170.6
AG1	E	UMTS 850	0.610	7.5	326.8	-168.5
AG0	A	UMTS 1750	0.179	56.8	246.6	-168.4
AG1	F	UMTS 1750	0.280	6.6	310.5	-168.1
AG0	A	UMTS 1900	0.156	55.9	247.0	-168.6
AG0	A	LTE Band 12	0.120	60.1	281.9	-170.3
AG1	E	LTE Band 12	0.739	17.6	330.8	-169.2
AG0	A	LTE Band 13	0.093	59.1	284.0	-170.5
AG1	E	LTE Band 13	0.683	18.7	331.7	-169.2
AG0	A	LTE Band 26	0.135	57.9	280.0	-170.7
AG1	E	LTE Band 26	0.585	19.3	332.7	-169.2
AG0	A	LTE Band 66	0.214	54.6	249.7	-169.2
AG1	F	LTE Band 66	0.388	5.8	304.8	-167.6
AG0	A	LTE Band 25	0.159	54.2	250.9	-169.3
AG1	F	LTE Band 25	0.391	5.9	306.2	-167.7
AG0	B	LTE Band 41	0.152	52.1	252.3	-169.8
AG1	F	LTE Band 41	0.164	-4.8	295.4	-164.6
AG0	A	NR Band n12	0.129	59.9	260.1	-170.0
AG1	E	NR Band n12	0.681	18.6	330.7	-169.2
AG0	A	NR Band n26	0.150	58.1	273.9	-171.0
AG1	E	NR Band n26	0.826	17.6	330.8	-169.2
AG0	A	NR Band n66	0.246	53.7	247.0	-170.9
AG1	F	NR Band n66	0.394	3.9	305.9	-167.4
AG0	A	NR Band n25	0.140	57.4	253.2	-169.1
AG1	F	NR Band n25	0.422	6.3	309.2	-168.0
AG0	B	NR Band n41	0.122	51.9	248.2	-169.4
AG0	D	NR Band n41	0.004	63.2	259.8	-169.9
AG1	E	NR Band n41	0.742	14.5	334.0	-168.8
AG1	F	NR Band n41	0.385	-3.9	296.9	-165.0
AG0	C	NR Band n77	0.042	51.5	245.5	-169.1
AG0	D	NR Band n77	0.000	106.2	365.9	-113.6
AG1	F	NR Band n77	0.357	-4.1	294.4	-164.6
AG1	H	NR Band n77	0.086	35.8	257.4	-169.0

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Table E-28
Head Left Tilt

Antenna Group	Antenna	Mode/Band	Reported SAR	X-Coord	Y-Coord	Z-Coord
AG0	A	GSM 850	0.068	14.5	302.7	-168.8
AG1	E	GSM 850	0.638	13.8	332.0	-168.9
AG0	A	GSM 1900	0.040	16.0	309.0	-169.3
AG0	A	UMTS 850	0.062	29.7	305.3	-170.7
AG1	E	UMTS 850	0.665	12.4	330.0	-168.9
AG0	A	UMTS 1750	0.069	15.2	305.8	-169.1
AG1	F	UMTS 1750	0.423	8.6	313.2	-168.5
AG0	A	UMTS 1900	0.075	16.5	307.9	-169.3
AG0	A	LTE Band 12	0.070	40.2	295.5	-171.6
AG1	E	LTE Band 12	0.586	17.6	330.8	-169.2
AG0	A	LTE Band 13	0.065	41.1	301.9	-171.6
AG1	E	LTE Band 13	0.620	10.1	326.9	-168.8
AG0	A	LTE Band 26	0.096	11.5	301.7	-168.3
AG1	E	LTE Band 26	0.554	6.3	326.7	-168.4
AG0	A	LTE Band 66	0.087	17.1	306.8	-169.4
AG1	F	LTE Band 66	0.536	8.2	309.6	-168.3
AG0	A	LTE Band 25	0.079	15.8	306.9	-169.2
AG1	F	LTE Band 25	0.498	10.1	310.1	-168.5
AG0	B	LTE Band 41	0.049	29.1	321.5	-170.3
AG1	F	LTE Band 41	0.151	-4.3	298.5	-165.2
AG0	A	NR Band n12	0.069	38.7	288.2	-171.3
AG1	E	NR Band n12	0.847	17.6	330.8	-169.2
AG0	A	NR Band n26	0.121	22.5	299.0	-169.7
AG1	E	NR Band n26	0.694	12.2	331.9	-168.7
AG0	A	NR Band n66	0.154	10.5	306.2	-168.4
AG1	F	NR Band n66	0.545	5.5	309.9	-167.9
AG0	A	NR Band n25	0.067	12.0	312.3	-168.9
AG1	F	NR Band n25	0.533	8.7	313.1	-168.5
AG0	B	NR Band n41	0.037	30.2	318.1	-170.5
AG0	D	NR Band n41	0.014	29.5	321.2	-170.3
AG1	E	NR Band n41	0.769	15.8	329.4	-169.1
AG1	F	NR Band n41	0.484	15.4	328.7	-169.1
AG0	C	NR Band n77	0.015	-2.6	288.2	-164.0
AG0	D	NR Band n77	0.000	106.2	365.9	-113.6
AG1	F	NR Band n77	0.380	-5.5	294.3	-164.3
AG1	H	NR Band n77	0.000	35.3	259.7	-169.2

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Table E-29
Body Back

Antenna Group	Antenna	Mode/Band	Reported SAR	X-Coord	Y-Coord
AG0	A	GSM 850	1.188	-42.0	71.3
AG1	E	GSM 850	0.657	-18.4	-78.7
AG0	A	GSM 1900	1.190	-19.4	82.7
AG0	A	UMTS 850	1.195	-41.1	69.9
AG1	E	UMTS 850	0.661	-17.9	-81.3
AG0	A	UMTS 1750	0.929	-23.4	79.3
AG1	F	UMTS 1750	0.631	-43.0	-75.9
AG0	A	UMTS 1900	1.001	-25.1	80.8
AG0	A	LTE Band 12	1.182	-45.2	72.1
AG1	E	LTE Band 12	0.594	-21.0	-84.1
AG0	A	LTE Band 13	0.763	-46.5	67.0
AG1	E	LTE Band 13	0.751	-18.6	-84.6
AG0	A	LTE Band 26	0.813	-45.5	63.9
AG1	E	LTE Band 26	0.797	-22.5	-80.2
AG0	A	LTE Band 66	0.850	-25.1	76.8
AG1	F	LTE Band 66	0.741	-48.6	-78.0
AG0	A	LTE Band 25	0.886	-26.0	80.0
AG1	F	LTE Band 25	0.708	-51.9	-72.2
AG0	B	LTE Band 41	0.786	-59.0	79.9
AG1	F	LTE Band 41	0.249	-32.9	-79.1
AG0	A	NR Band n12	0.993	-43.0	75.9
AG1	E	NR Band n12	0.823	-20.5	-81.9
AG0	A	NR Band n26	1.045	-43.1	65.3
AG1	E	NR Band n26	0.735	-14.6	-83.6
AG0	A	NR Band n66	1.034	-28.8	81.8
AG1	F	NR Band n66	0.811	-40.2	-80.2
AG0	A	NR Band n25	1.103	-26.3	81.2
AG1	F	NR Band n25	0.917	-41.3	-80.3
AG0	B	NR Band n41	0.750	-53.2	78.1
AG0	D	NR Band n41	0.914	-15.9	70.2
AG1	E	NR Band n41	0.522	6.4	-78.7
AG1	F	NR Band n41	0.758	-43.5	-78.7
AG0	C	NR Band n77	0.951	-64.7	58.5
AG0	D	NR Band n77	0.714	-8.9	65.0
AG1	F	NR Band n77	0.732	-45.8	-73.1
AG1	H	NR Band n77	0.481	-54.5	-33.6
AG1	E	LTE Band 17	0.932	-11.6	-80.3

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**Table E-30
Body-worn Back**

Antenna	Mode/Band	Reported SAR	X-Coord	Y-Coord
G	2.4 GHz WIFI	0.481	-66.7	-47.4
I	2.4 GHz WIFI	0.105	2.6	-60.8
MIMO	2.4 GHz WIFI	0.514	-53.1	-54.6
E	5 GHz WIFI	0.318	-10.6	-78.2
G	5 GHz WIFI	0.225	-64.4	-64.5
MIMO	5 GHz WIFI	0.300	-64.6	-70.4
E	6 GHz WIFI	0.261	-17.0	-76.0
G	6 GHz WIFI	0.067	-62.2	-70.5
MIMO	6 GHz WIFI	0.280	-12.5	-72.6
G	2.4 GHz Bluetooth	0.246	-65.5	-50.3
I	2.4 GHz Bluetooth	0.331	4.3	-34.6
MIMO	2.4 GHz Bluetooth	0.300	10.4	-55.0

**Table E-31
Hotspot Back**

Antenna	Mode/Band	Reported SAR	X-Coord	Y-Coord
G	2.4 GHz WIFI	0.481	-66.7	-47.4
I	2.4 GHz WIFI	0.105	2.6	-60.8
MIMO	2.4 GHz WIFI	0.514	-53.1	-54.6
E	5 GHz WIFI	0.318	-10.6	-78.2
G	5 GHz WIFI	0.225	-64.4	-64.5
MIMO	5 GHz WIFI	0.300	-64.6	-70.4
E	6 GHz WIFI	0.261	-17.0	-76.0
G	6 GHz WIFI	0.067	-62.2	-70.5
MIMO	6 GHz WIFI	0.280	-12.5	-72.6
G	2.4 GHz Bluetooth	0.201	-55.8	-53.6

**Table E-32
Body Front**

Antenna Group	Antenna	Mode/Band	Reported SAR	X-Coord	Y-Coord
AG0	A	GSM 850	1.188	-42.0	71.3
AG1	E	GSM 850	0.657	-18.4	-78.7
AG0	A	GSM 1900	1.190	-19.4	82.7
AG0	A	UMTS 850	1.195	-41.1	69.9
AG1	E	UMTS 850	0.661	-17.9	-81.3
AG0	A	UMTS 1750	0.929	-23.4	79.3
AG1	F	UMTS 1750	0.631	-43.0	-75.9
AG0	A	UMTS 1900	1.001	-25.1	80.8
AG0	A	LTE Band 12	1.182	-45.2	72.1
AG1	E	LTE Band 12	0.594	-21.0	-84.1
AG0	A	LTE Band 13	0.763	-46.5	67.0
AG1	E	LTE Band 13	0.751	-18.6	-84.6
AG0	A	LTE Band 26	0.813	-45.5	63.9
AG1	E	LTE Band 26	0.797	-22.5	-80.2
AG0	A	LTE Band 66	0.850	-25.1	76.8
AG1	F	LTE Band 66	0.741	-48.6	-78.0
AG0	A	LTE Band 25	0.886	-26.0	80.0
AG1	F	LTE Band 25	0.708	-51.9	-72.2
AG0	B	LTE Band 41	0.786	-59.0	79.9
AG1	F	LTE Band 41	0.249	-32.9	-79.1
AG0	A	NR Band n12	0.993	-43.0	75.9
AG1	E	NR Band n12	0.823	-20.5	-81.9
AG0	A	NR Band n26	1.045	-43.1	65.3
AG1	E	NR Band n26	0.735	-14.6	-83.6
AG0	A	NR Band n66	1.034	-28.8	81.8
AG1	F	NR Band n66	0.811	-40.2	-80.2
AG0	A	NR Band n25	1.103	-26.3	81.2
AG1	F	NR Band n25	0.917	-41.3	-80.3
AG0	B	NR Band n41	0.750	-53.2	78.1
AG0	D	NR Band n41	0.914	-15.9	70.2
AG1	E	NR Band n41	0.522	6.4	-78.7
AG1	F	NR Band n41	0.758	-43.5	-78.7
AG0	C	NR Band n77	0.951	-64.7	58.5
AG0	D	NR Band n77	0.714	-8.9	65.0
AG1	F	NR Band n77	0.732	-45.8	-73.1
AG1	H	NR Band n77	0.481	-54.5	-33.6
AG1	E	LTE Band 17	0.932	-11.6	-80.3

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Table E-33
Body Top

Antenna	Mode/Band	Reported SAR
E	GSM 850	0.204
E	UMTS 850	0.261
F	UMTS 1750	0.436
E	LTE Band 12	0.155
E	LTE Band 13	0.260
E	LTE Band 26	0.274
F	LTE Band 66	0.469
F	LTE Band 25	0.641
F	LTE Band 41	0.131
E	NR Band n12	0.281
E	NR Band n26	0.232
F	NR Band n66	0.545
F	NR Band n25	0.675
E	NR Band n41	0.116
F	NR Band n41	0.545
F	NR Band n77	0.197
E	LTE Band 17	0.251

Table E-34
Body Bottom

Antenna	Mode/Band	Reported SAR
A	GSM 850	0.118
A	GSM 1900	1.147
A	UMTS 850	0.118
A	UMTS 1750	0.674
A	UMTS 1900	0.809
A	LTE Band 12	0.207
A	LTE Band 13	0.117
A	LTE Band 26	0.104
A	LTE Band 66	0.482
A	LTE Band 25	0.799
B	LTE Band 41	0.191
A	NR Band n12	0.161
A	NR Band n26	0.111
A	NR Band n66	0.977
A	NR Band n25	0.893
B	NR Band n41	0.266
D	NR Band n41	0.066
C	NR Band n77	0.068
D	NR Band n77	0.031

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Table E-35
Body Left

Antenna	Mode/Band	Reported SAR
A	GSM 850	0.144
A	GSM 1900	0.066
A	UMTS 850	0.089
A	UMTS 1750	0.100
F	UMTS 1750	0.063
A	UMTS 1900	0.058
A	LTE Band 12	0.225
A	LTE Band 13	0.109
A	LTE Band 26	0.104
A	LTE Band 66	0.094
F	LTE Band 66	0.115
A	LTE Band 25	0.034
F	LTE Band 25	0.142
B	LTE Band 41	0.220
F	LTE Band 41	0.014
A	NR Band n12	0.122
A	NR Band n26	0.134
A	NR Band n66	0.142
F	NR Band n66	0.125
A	NR Band n25	0.081
F	NR Band n25	0.105
B	NR Band n41	0.134
F	NR Band n41	0.026
C	NR Band n77	0.266
F	NR Band n77	0.041
H	NR Band n77	0.066

**Table E-36
Body Right**

Antenna	Mode/Band	Reported SAR
A	GSM 850	0.113
E	GSM 850	0.169
A	GSM 1900	0.075
A	UMTS 850	0.347
E	UMTS 850	0.180
A	UMTS 1750	0.052
A	UMTS 1900	0.062
A	LTE Band 12	0.285
E	LTE Band 12	0.194
A	LTE Band 13	0.169
E	LTE Band 13	0.185
A	LTE Band 26	0.115
E	LTE Band 26	0.220
A	LTE Band 66	0.054
A	LTE Band 25	0.076
A	NR Band n12	0.186
E	NR Band n12	0.203
A	NR Band n26	0.184
E	NR Band n26	0.192
A	NR Band n66	0.046
A	NR Band n25	0.063
D	NR Band n41	0.006
E	NR Band n41	0.105
D	NR Band n77	0.011
E	LTE Band 17	0.264

E.10 Conclusion

The above numerical summed SAR results and SPLSR for all 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 D04v01 and IEEE 1528- 2013 Section 6.3.4.1.

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