Appendix F. SAR Test Reduction Proposal

The SAR test reduction proposal is shown as follow.

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FCC ID: H9PMC55A0

A) modes	B) 2 Barcode Scanner	C) 3 Keypad	D) 2 Battery	E) 2 Body-Mount Disclosed
1) 802.11abg (Main Ant)	1) SE960 2) SE4500	1) PIM 2) Qwerty 3) Numeric	1) 1X 2) 1.5X	1) SG-MC5511110-01R (Display-Inward only) 2) SG-MC5521110-01R 3) 1.5 cm (air gap - no holster)

Highlighted channels marked yellow are the default test channels for proposed final SAR report.
Highlighted Channels marked blue are the additional test channels per KDB 248227 requirement.
For 802.11b, all channels SAR will be performed if the SAR of the highest power channel is larger than 0.8 W/kg.

SAR Test Procedure (SAR Test Reduction)

Limited SAR pretesting was performed to identify which test position would produce the highest SAR reading.
Below are the test results.

System & Position					DUT & Accessory					SAR
Plot No.	Band	Test Position	Separation Distance (cm)	Channel	Ant Status	Battery	Keypad	Scanner	Holster	SAR 1g (mW/g)
#1	802.11a	Right Cheek	-	36	Main	1	2	2	-	0.016
#2	802.11a	Right Tilted	-	36	Main	1	2	2	-	0.023
#3	802.11a	Left Cheek	-	36	Main	1	2	2	-	0.028
#4	802.11a	Left Tilted	-	36	Main	1	2	2	-	0.034

As expected **Left head Tilt** found to produce highest SAR reading; due to position of WLAN antenna in relation to phantom.

Next steps:

Step 1) HL T --- Confirm highest SAR configuration using highest power channel for each band (marked as orange cells)

Step 2) HL C --- Test only configuration which produces highest result in mode HL T

Step 3) HR T --- Test only configuration which produces highest result in mode HL T

Step 4) HR C --- Test only configuration which produces highest result in mode HL T

Step 5) Test others default and additional channels (marked as yellow and blue cells) on the highest SAR position

Important Note
In the event that higher SAR values are found in other test mode, we will need to redefine test configurations to ensure maximum SAR is captured.

Row#	Body, or Head (ear) L or R	Cheek or Tilt	A) mode	B) Scanner	C) Keypad	D) Battery	E) Body-Mount	F) body-worn	Ch1 2.412 b	Ch6 2.437 b	Ch11 2.462 b	Ch1 2.412 g	Ch6 2.437 g	Ch11 2.462 g	Ch36 5.18	Ch40 5.2 (alt)	Ch44 5.22 (alt)	Ch48 5.24	Ch52 5.26	Ch56 5.28 (alt)	Ch60 5.30 (alt)	Ch64 5.32	Ch100 5.5 (alt)	Ch104 5.52	Ch108 5.54 (alt)	Ch112 5.56 (alt)	Ch116 5.58	Ch120 5.6 (alt)	Ch124 5.62	Ch128 5.64 (alt)	Ch132 5.66 (alt)	Ch136 5.68	Ch140 5.7 (alt)	Ch149 5.745 DTS/NII	Ch153 5.765 (alt)	Ch157 5.785 DTS	Ch161 5.805 NII	Ch165 5.825 DTS
PdBm									13.42	13.32	13.36	11.28	15.41	11.20	13.05	13.75	14.30	12.50	15.01	14.38	14.60	11.70	12.51	15.57	15.53	15.21	15.20	13.78	15.57	14.83	14.35	14.27	8.40	15.04	14.75	15.19	15.00	14.38
1	H L	T	1	1	1	1			0.062				0.075				0.063		0.088					0.068												0.136		
2	H L	T	1	1	1	2							0.072				0.05		0.088					0.057												0.093		
3	H L	T	1	1	2	1							0.1				0.099		0.139					0.084												0.117		
4	H L	T	1	1	2	2							0.113				0.096		0.151					0.065												0.109		
5	H L	T	1	1	3	1							0.063		0.109		**0.129**	0.081	0.145					**0.116**			0.088		0.073		0.073	0.081				0.122		
6	H L	T	1	1	3	2							0.059				0.128		0.131					0.104												0.116		
7	H L	T	1	2	1	1							0.099				0.087		0.093					0.094										0.145		**0.145**	0.145	0.143
8	H L	T	1	2	1	2							0.1				0.075		0.071					0.082												0.137		
9	H L	T	1	2	2	1							**0.129**				0.092		0.15					0.033												0.051		
10	H L	T	1	2	2	2							0.12				0.124		**0.165**		0.081	0.029		0.025												0.048		
11	H L	T	1	2	3	1							0.111				0.091		0.105					0.058												0.085		
12	H L	T	1	2	3	2							0.106				0.075		0.08					0.038												0.079		
13	H L	C	1	1	1	1																																
14	H L	C	1	1	1	2																																
15	H L	C	1	1	2	1																																
16	H L	C	1	1	2	2																																
17	H L	C	1	1	3	1											0.11							0.061														
18	H L	C	1	1	3	2																																
19	H L	C	1	2	1	1																														0.11		
20	H L	C	1	2	1	2																																
21	H L	C	1	2	2	1							0.092																									
22	H L	C	1	2	2	2													0.117																			
23	H L	C	1	2	3	1																																
24	H L	C	1	2	3	2																																
25	H R	T	1	1	1	1																																
26	H R	T	1	1	1	2																																
27	H R	T	1	1	2	1																																
28	H R	T	1	1	2	2																																
29	H R	T	1	1	3	1											0.12							0.061														
30	H R	T	1	1	3	2																																
31	H R	T	1	2	1	1																														0.139		
32	H R	T	1	2	1	2																																
33	H R	T	1	2	2	1							0.072																									
34	H R	T	1	2	2	2													0.089																			
35	H R	T	1	2	3	1																																
36	H R	T	1	2	3	2																																

Row#	Body, or Head (ear) L or R	Cheek or Tilt	A) mode	B) Scanner	C) Keypad	D) Battery	E) Body-Mount	F) body-worn	Ch1 2.412 b	Ch6 2.437 b	Ch11 2.462 b	Ch1 2.412 g	Ch6 2.437 g	Ch11 2.462 g	Ch36 5.18	Ch40 5.2 (alt)	Ch44 5.22 (alt)	Ch48 5.24	Ch52 5.26	Ch56 5.28 (alt)	Ch60 5.30 (alt)	Ch64 5.32	Ch100 5.5 (alt)	Ch104 5.52	Ch108 5.54 (alt)	Ch112 5.56 (alt)	Ch116 5.58	Ch120 5.6 (alt)	Ch124 5.62	Ch128 5.64 (alt)	Ch132 5.66 (alt)	Ch136 5.68	Ch140 5.7 (alt)	Ch149 5.745 DTS/NII	Ch153 5.765 (alt)	Ch157 5.785 DTS	Ch161 5.805 NII	Ch165 5.825 DTS
PdBm									13.42	13.32	13.36	11.28	15.41	11.20	13.05	13.75	14.30	12.50	15.01	14.38	14.60	11.70	12.51	15.57	15.53	15.21	15.20	13.78	15.57	14.83	14.35	14.27	8.40	15.04	14.75	15.19	15.00	14.38
37	H R	C	1	1	1	1																																
38	H R	C	1	1	1	2																																
39	H R	C	1	1	2	1																																
40	H R	C	1	1	2	2																																
41	H R	C	1	1	3	1											0.093							0.11														
42	H R	C	1	1	3	2																																
43	H R	C	1	2	1	1																														0.14		
44	H R	C	1	2	1	2																																
45	H R	C	1	2	2	1							0.049																									
46	H R	C	1	2	2	2													0.075																			
47	H R	C	1	2	3	1																																
48	H R	C	1	2	3	2																																

BODY SAR

Again for Body SAR same rational (test reduction again)

SAR Test Procedure (SAR Test Reduction)

Limited SAR pretesting was performed to identify worst case position using air gap (1.5cm)
Below are the test results.

System & Position					DUT & Accessory					SAR
Plot No.	Band	Test Position	Separation Distance (cm)	Channel	Ant Status	Battery	Keypad	Scanner	Holster	SAR 1g (mW/g)
#1	802.11a	Face	1.5	36	Main	2	2	2	-	0.00511
#2	802.11a	Bottom	1.5	36	Main	2	2	2	-	0.07

Next steps:

Step 1) --- Confirm highest SAR configuration using highest power channel for each band (marked as orange cells)

Step 2) --- Test only configuration which produces highest result in mode Air gap

Step 3) --- Test only configuration which produces highest result in mode Air gap

Step 4) --- Test only configuration which produces highest result in mode Air gap

Step 5) Test others default and additional channels (marked as yellow and blue cells) on the highest SAR position

Important Note
In the event that higher SAR values are found in other test mode, we will need to redefine test configurations to ensure maximum SAR is captured.

Row#	Body, or Head (ear) L or R	Cheek or Tilt	A) mode	B) Scanner	C) Keypad	D) Battery	E) Body-Mount	F) body-worn	Ch1 2.412 b	Ch6 2.437 b	Ch11 2.462 b	Ch1 2.412 g	Ch6 2.437 g	Ch11 2.462 g	Ch36 5.18	Ch40 5.2 (alt)	Ch44 5.22 (alt)	Ch48 5.24	Ch52 5.26	Ch56 5.28 (alt)	Ch60 5.30 (alt)	Ch64 5.32	Ch100 5.5 (alt)	Ch104 5.52	Ch108 5.54 (alt)	Ch112 5.56 (alt)	Ch116 5.58	Ch120 5.6 (alt)	Ch124 5.62	Ch128 5.64 (alt)	Ch132 5.66 (alt)	Ch136 5.68	Ch140 5.7 (alt)	Ch149 5.745 DTS/NII	Ch153 5.765 (alt)	Ch157 5.785 DTS	Ch161 5.805 NII	Ch165 5.825 DTS
PdBm									13.42	13.32	13.36	11.28	15.41	11.20	13.05	13.75	14.30	12.50	15.01	14.38	14.60	11.70	12.51	15.57	15.53	15.21	15.20	13.78	15.57	14.83	14.35	14.27	8.40	15.04	14.75	15.19	15.00	14.38
49	B		1	1	1	1	1	F																**0.013**														
50	B		1	1	1	2	1	F																														
51	B		1	1	2	1	1	F																														
52	B		1	1	2	2	1	F																														
53	B		1	1	3	1	1	F																														
54	B		1	1	3	2	1	F																														
55	B		1	2	1	1	1	F																														
56	B		1	2	1	2	1	F																														
57	B		1	2	2	1	1	F					**0.151**				**0.014**		**0.021**																	**0.013**		
58	B		1	2	2	2	1	F																														
59	B		1	2	3	1	1	F																														
60	B		1	2	3	2	1	F																														
61	B		1	1	1	1	2	F																0.019														
62	B		1	1	1	2	2	F																														
63	B		1	1	2	1	2	F																														
64	B		1	1	2	2	2	F																														
65	B		1	1	3	1	2	F																														
66	B		1	1	3	2	2	F																														
67	B		1	2	1	1	2	F																														
68	B		1	2	1	2	2	F																														
69	B		1	2	2	1	2	F					0.031				0.025		0.03																	0.026		
70	B		1	2	2	2	2	F																														
71	B		1	2	3	1	2	F																														
72	B		1	2	3	2	2	F																														

Row#	Body, or Head (ear) L or R	Cheek or Tilt	A) mode	B) Scanner	C) Keypad	D) Battery	E) Body-Mount	F) body-worn	Ch1 2.412 b	Ch6 2.437 b	Ch11 2.462 b	Ch1 2.412 g	Ch6 2.437 g	Ch11 2.462 g	Ch36 5.18	Ch40 5.2 (alt)	Ch44 5.22 (alt)	Ch48 5.24	Ch52 5.26	Ch56 5.28 (alt)	Ch60 5.30 (alt)	Ch64 5.32	Ch100 5.5 (alt)	Ch104 5.52	Ch108 5.54 (alt)	Ch112 5.56 (alt)	Ch116 5.58	Ch120 5.6 (alt)	Ch124 5.62	Ch128 5.64 (alt)	Ch132 5.66 (alt)	Ch136 5.68	Ch140 5.7 (alt)	Ch149 5.745 DTS/NII	Ch153 5.765 (alt)	Ch157 5.785 DTS	Ch161 5.805 NII	Ch165 5.825 DTS
PdBm									13.42	13.32	13.36	11.28	15.41	11.20	13.05	13.75	14.30	12.50	15.01	14.38	14.60	11.70	12.51	15.57	15.53	15.21	15.20	13.78	15.57	14.83	14.35	14.27	8.40	15.04	14.75	15.19	15.00	14.38
73	B		1	1	1	1	2	B																**0.161**														
74	B		1	1	1	2	2	B																														
75	B		1	1	2	1	2	B																														
76	B		1	1	2	2	2	B																														
77	B		1	1	3	1	2	B																														
78	B		1	1	3	2	2	B																														
79	B		1	2	1	1	2	B																														
80	B		1	2	1	2	2	B																														
81	B		1	2	2	1	2	B					**0.05**		0.138		**0.25**	0.205	**0.252**																	**0.166**		
82	B		1	2	2	2	2	B																														
83	B		1	2	3	1	2	B																														
84	B		1	2	3	2	2	B																														
85	B		1	1	1	1	3	F																0.02														
86	B		1	1	1	2	3	F																														
87	B		1	1	2	1	3	F																														
88	B		1	1	2	2	3	F																														
89	B		1	1	3	1	3	F																														
90	B		1	1	3	2	3	F																														
91	B		1	2	1	1	3	F																														
92	B		1	2	1	2	3	F																														
93	B		1	2	2	1	3	F					0.035				0.032		0.055																	0.029		
94	B		1	2	2	2	3	F																														
95	B		1	2	3	1	3	F																														
96	B		1	2	3	2	3	F																														
97	B		1	1	1	1	3	B	0.03				0.038				0.171		0.395					**0.233**			0.197		0.198		**0.238**	0.166				0.283		
98	B		1	1	1	2	3	B					0.029				0.183		0.256					0.14												0.131		
99	B		1	1	2	1	3	B					0.041				0.177		0.324					0.225												0.31		
100	B		1	1	2	2	3	B					0.028				0.17		0.265					0.143												0.238		
101	B		1	1	3	1	3	B					0.037				0.184		0.32					0.232												0.223		
102	B		1	1	3	2	3	B					0.029				0.14		0.246					0.138												0.206		
103	B		1	2	1	1	3	B					0.047				0.154		0.278					0.229												0.311		
104	B		1	2	1	2	3	B					0.033				0.119		0.195					0.142												0.266		
105	B		1	2	2	1	3	B					**0.053**				**0.199**		**0.396**		0.356	0.188		0.222										0.167		**0.323**	0.216	0.215
106	B		1	2	2	2	3	B					0.042				0.158		0.286					0.148												0.312		
107	B		1	2	3	1	3	B					0.052				0.17		0.331					0.172												0.279		
108	B		1	2	3	2	3	B					0.036				0.135		0.24					0.111												0.258		