

PCTEST

7185 Oakland Mills Road, Columbia, MD 21046 USA Tel. +1.410.290.6652 / Fax +1.410.290.6654 http://www.pctest.com



SAR EVALUATION REPORT

Applicant Name:

Samsung Electronics Co., Ltd. 129, Samsung-ro, Maetan dong, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 10/08/21 – 12/14/21 Test Site/Location: PCTEST Lab, Columbia, MD, USA Document Serial No.: 1M2109290114-01.A3L (Rev2)

FCC ID: A3LSMS901E

APPLICANT: SAMSUNG ELECTRONICS CO., LTD.

DUT Type: Portable Handset
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: SM-S901E/DS
Additional Model: SM-S901E

	Olvi	-0301L				
Equipment	Band & Mode	Tx Frequency		S	AR	
Class	ballu & Mode	1x Frequency	1g Head (W/kg)	1g Body- Worn (W/kg)	1g Hotspot (W/kg)	10g Phablet (W/kg)
PCE	GSM/GPRS/EDGE 850	824.20 - 848.80 MHz	0.27	0.30	0.79	N/A
PCE	GSM/GPRS/EDGE 1900	1850.20 - 1909.80 MHz	0.11	0.32	0.64	1.17
PCE	UMTS 850	826.40 - 846.60 MHz	0.43	0.56	0.81	N/A
PCE	UMTS 1750	1712.4 - 1752.6 MHz	0.21	0.76	0.82	1.70
PCE	UMTS 1900	1852.4 - 1907.6 MHz	0.22	0.72	0.86	1.31
PCE	LTE Band 12	699.7 - 715.3 MHz	0.10	0.18	0.26	N/A
PCE	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 13	779.5 - 784.5 MHz	0.22	0.30	0.41	N/A
PCE	LTE Band 26 (Cell)	814.7 - 848.3 MHz	0.26	0.28	0.50	N/A
PCE	LTE Band 5 (Cell)	824.7 - 848.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.20	0.59	0.75	1.21
PCE	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	0.39	0.24	0.17	N/A
PCE	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.20	0.48	0.80	1.16
PCE	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A	N/A	N/A
PCE	LTE Band 41	2498.5 - 2687.5 MHz	< 0.1	0.19	0.48	1.36
PCE	NR Band n5 (Cell)	826.5 - 846.5 MHz	0.22	0.30	0.49	N/A
PCE	NR Band n66 (AWS)	1712.5 - 1777.5 MHz	0.91	0.92	1.17	2.23
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.15	0.15	0.40	N/A
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.48	0.19	N/A	1.20
NII	U-NII-2C	5500 - 5720 MHz	0.44	0.10	N/A	0.85
NII	U-NII-3	5745 - 5825 MHz	0.39	< 0.1	0.11	N/A
NII	U-NII-4	5845 - 5885 MHz	0.38	0.12	N/A	0.68
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.23	< 0.1	0.19	N/A
Simultaneous	s SAR per KDB 690783 D01v0	01r03:	1.58	1.26	1.53	2.97

Note: This revised Test Report supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.9 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.









The SAR Tick is an initiative of the Mobile & Wireless Forum (MWF). While a product may be considered eligible, use of the SAR Tick logo requires an agreement with the MWF. Further details can be obtained by emailing: sartick@mwfai.info.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo 1 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 1 of 107

TABLE OF CONTENTS

1	DEVICE	UNDER TEST	3
2	LTE ANI	D NR INFORMATION	16
3	INTROD	DUCTION	18
4	DOSIME	ETRIC ASSESSMENT	19
5	DEFINIT	TION OF REFERENCE POINTS	20
6	TEST C	ONFIGURATION POSITIONS	21
7	RF EXP	OSURE LIMITS	25
8	FCC ME	ASUREMENT PROCEDURES	26
9	RF CON	IDUCTED POWERS	32
10	SYSTEM	/I VERIFICATION	58
11	SAR DA	TA SUMMARY	67
12	SAR ME	ASUREMENT VARIABILITY	93
13	ADDITIO	DNAL TESTING PER FCC GUIDANCE	94
14	EQUIPM	MENT LIST	103
15	MEASU	REMENT UNCERTAINTIES	104
16	CONCL	USION	105
17	REFERE	ENCES	106
APPEN APPEN APPEN APPEN APPEN APPEN APPEN APPEN APPEN	NDIX A: NDIX B: NDIX C: NDIX E: NDIX F: NDIX G: NDIX H: NDIX I: NDIX J: NDIX K:	SAR TEST PLOTS SAR DIPOLE VERIFICATION PLOTS SAR TISSUE SPECIFICATIONS SIMULTANEOUS NUMERICAL CALCULATIONS DUT ANTENNA DIAGRAM & SAR TEST SETUP PHOTOGRAPHS SAR SYSTEM VALIDATION POWER REDUCTION VERIFICATION LTE AND NR LOWER BANDWIDTH RF CONDUCTED POWERS DOWNLINK LTE CA RF CONDUCTED POWERS 802.11ax RU SAR EXCLUSION PROBE AND DIPOLE CALIBRATION CERTIFICATES	

	FCC ID: A3LSMS901E	Proud to be part of (8) element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dog 2 of 107
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	14/21 Portable Handset		Page 2 of 107
© 202	1 PCTEST.		•		REV 21.4 M

1.1 **Device Overview**

Band & Mode	Operating Modes	Tx Frequency
GSM/GPRS/EDGE 850	Voice/Data	824.20 - 848.80 MHz
GSM/GPRS/EDGE 1900	Voice/Data	1850.20 - 1909.80 MHz
UMTS 850	Voice/Data	826.40 - 846.60 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
NR Band n5 (Cell)	Voice/Data	826.5 - 846.5 MHz
NR Band n66 (AWS)	Voice/Data	1712.5 - 1777.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
U-NII-4	Voice/Data	5845 - 5885 MHz
Bluetooth	Data	2402 - 2480 MHz
NFC Data	Data	13.56 MHz

FCC ID: A3LSMS901E	Poud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 2 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 3 of 107

© 2021 PCTEST. REV 21.4 M

1.2 Power Reduction for SAR

This device utilizes a power reduction mechanism for some wireless modes and bands for SAR compliance under portable hotspot conditions and under some conditions when the device is being used in close proximity to the user's hand. All hotspot SAR evaluations for this device were performed at the maximum allowed output power when hotspot is enabled. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in phablet use conditions. Detailed descriptions of the power reduction mechanism are included in the operational description.

This device used an independent fixed level power reduction mechanism for WLAN when 5G NR is active and also for WLAN/BT during all voice or VoIP held to ear scenarios. Per FCC Guidance, the held-to-ear exposure conditions were evaluated at reduced power according to the head SAR positions described in IEEE 1528-2013. Detailed descriptions of the power reduction mechanism are included in the operational description.

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

1.3.1 2G/3G/4G/5G Output Power

GSM/GPRS/EDGE 850										
Power Level		Voice (in dBm)	Data	Data - Burst Average GMSK (in dBm)			Data - Burst Average 8-PSK (in dBm)			
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
Maximum	Max Allowed Power	33.0	33.0	32.5	30.5	28.5	28.0	26.0	24.0	23.0
iviaxiiiiuiii	Nominal	32.0	32.0	31.5	29.5	27.5	27.0	25.0	23.0	22.0
Proximity Sensor Active	Max Allowed Power	33.0	33.0	32.5	30.5	28.5	28.0	26.0	24.0	23.0
Froximity Sensor Active	Nominal	32.0	32.0	31.5	29.5	27.5	27.0	25.0	23.0	22.0
RCV Mode Active	Max Allowed Power	33.0	33.0	32.5	30.5	28.5	28.0	26.0	24.0	23.0
NEV Wode Active	Nominal	32.0	32.0	31.5	29.5	27.5	27.0	25.0	23.0	22.0
Hotspot Mode Active	Max Allowed Power	N/A	33.0	32.5	30.5	28.5	28.0	26.0	24.0	23.0
Hotspot Wode Active	Nominal	N/A	32.0	31.5	29.5	27.5	27.0	25.0	23.0	22.0
Earjack Active	Max Allowed Power	33.0	33.0	32.5	30.5	28.5	28.0	26.0	24.0	23.0
Earjack Active	Nominal	32.0	32.0	31.5	29.5	27.5	27.0	25.0	23.0	22.0
			GSM/GPR	S/EDGE 1900	l .					
Power Level		Voice (in dBm)	Data - Burst Average GMSK (in dBm)			Data	- Burst Avera	age 8-PSK (in	dBm)	
		1 TX Slot	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots	1 TX Slots	2 TX Slots	3 TX Slots	4 TX Slots
Maximum	Max Allowed Power	30.0	30.0	29.0	27.5	25.5	27.0	25.0	23.0	22.0
iviaximum	Nominal	29.0	29.0	28.0	26.5	24.5	26.0	24.0	22.0	21.0
Dravimity Cancar Active	Max Allowed Power	29.0	29.0	27.0	25.5	23.0	27.0	25.0	23.0	22.0
Proximity Sensor Active	Nominal	28.0	28.0	26.0	24.5	22.0	26.0	24.0	22.0	21.0
RCV Mode Active	Max Allowed Power	30.0	30.0	29.0	27.5	25.5	27.0	25.0	23.0	22.0
Nev Mode Active	Nominal	29.0	29.0	28.0	26.5	24.5	26.0	24.0	22.0	21.0
Hotspot Mode Active	Max Allowed Power	N/A	29.0	27.0	25.5	23.0	27.0	25.0	23.0	22.0
Hotspot Wode Active	Nominal	N/A	28.0	26.0	24.5	22.0	26.0	24.0	22.0	21.0
Earjack Active	Max Allowed Power	29.0	29.0	27.0	25.5	23.0	27.0	25.0	23.0	22.0
Earjack Active	Nominal	28.0	28.0	26.0	24.5	22.0	26.0	24.0	22.0	21.0

For GSM, the above powers listed are GSM burst average values.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 4 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 4 of 107

21 PCTEST. REV 21.4 09/11/201

	UMTS Band 5 (8	50 IVIHZ)			
		Mod	ulated Avera	ige Output P	ower
Power Level		3GPP	3GPP	3GPP	3GPP DC-
Power Level		WCDMA	HSDPA	HSUPA	HSDPA
		Rel 99	Rel 5	Rel 6	Rel 8
Maximum	Max Allowed Power	25.5	24.5	24.5	24.5
Maximum	Nominal	24.5	23.5	23.5	23.5
Dravimity Cancar Activa	Max Allowed Power	25.5	24.5	24.5	24.5
Proximity Sensor Active	Nominal	24.5	23.5	23.5	23.5
RCV Mode Active	Max Allowed Power	25.5	24.5	24.5	24.5
KCV Mode Active	Nominal	24.5	23.5	23.5	23.5
Hatspot Mada Astiva	Max Allowed Power	25.5	24.5	24.5	24.5
Hotspot Mode Active	Nominal	24.5	23.5	23.5	23.5
Fariack Active	Max Allowed Power	25.5	24.5	24.5	24.5
Earjack Active	Nominal	24.5	23.5	23.5	23.5
	UMTS Band 4 (17	'50 MHz)			
		Mod	ulated Avera	ige Output P	ower
Power Level		3GPP	3GPP	3GPP	3GPP DC
Power Level		WCDMA	HSDPA	HSUPA	HSDPA
		Rel 99	Rel 5	Rel 6	Rel 8
Maximum	Max Allowed Power	24.0	23.0	23.0	23.0
IVIAXIIIIUIII	Nominal	23.0	22.0	22.0	22.0
Dravimity Concor Activo	Max Allowed Power	20.0	19.0	19.0	19.0
Proximity Sensor Active	Nominal	19.0	18.0	18.0	18.0
RCV Mode Active	Max Allowed Power	24.0	23.0	23.0	23.0
KCV Mode Active	Nominal	23.0	22.0	22.0	22.0
Hatspot Mada Astiva	Max Allowed Power	20.0	19.0	19.0	19.0
Hotspot Mode Active	Nominal	19.0	18.0	18.0	18.0
Earjack Active	Max Allowed Power	20.0	19.0	19.0	19.0
Edijack Active	Nominal	19.0	18.0	18.0	18.0
	UMTS Band 2 (19	000 MHz)			
		Mod	ulated Avera	ge Output P	ower
Power Level		3GPP	3GPP	3GPP	3GPP DC
rower Level		WCDMA	HSDPA	HSUPA	HSDPA
		Rel 99	Rel 5	Rel 6	Rel 8
Maximum	Max Allowed Power	24.7	23.7	23.7	23.7
IVIGAIIIIGIII	Nominal	23.7	22.7	22.7	22.7
Proximity Sensor Active	Max Allowed Power	20.0	19.0	19.0	19.0
Trovillity Sensor Active	Nominal	19.0	18.0	18.0	18.0
RCV Mode Active	Max Allowed Power	24.7	23.7	23.7	23.7
NOV IVIOUS ACTIVE	Nominal	23.7	22.7	22.7	22.7
Hotspot Mode Active	Max Allowed Power	20.0	19.0	19.0	19.0
Hotspot Wode Active	Nominal	19.0	18.0	18.0	18.0
Earjack Active	Max Allowed Power	20.0	19.0	19.0	19.0
Edijack Active	Nominal	19.0	18.0	18.0	18.0

FCC ID: A3LSMS901E	PCTEST* Proud to be post of @ element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 5 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Page 5 of 107

			Modulated Average Output Power (in dBm)					
Mode / Band	Antenna		Maximum	Proximity Sensor Active	RCV Mode Active	Hotspot Mode Active	Earjack Active	
LTE Band 12	Α	Max Allowed Power	24.5	24.5	24.5	24.5	24.5	
LIE Ballu 12	A	Nominal	23.5	23.5	23.5	23.5	23.5	
LTE Band 17	Α	Max Allowed Power	24.5	24.5	24.5	24.5	24.5	
LIE Dallu 17	А	Nominal	23.5	23.5	23.5	23.5	23.5	
LTE Band 13	Α	Max Allowed Power	24.5	24.5	24.5	24.5	24.5	
LIL Dallu 13	A	Nominal	23.5	23.5	23.5	23.5	23.5	
LTE Band 26 (Cell)	Α	Max Allowed Power	24.0	24.0	24.0	24.0	24.0	
LTL Balla 20 (Cell)	^	Nominal	23.0	23.0	23.0	23.0	23.0	
LTE Band 5 (Cell)	Α	Max Allowed Power	24.0	24.0	24.0	24.0	24.0	
LTL Balla 5 (Cell)	^	Nominal	23.0	23.0	23.0	23.0	23.0	
LTE Band 66 (AWS)	Α	Max Allowed Power	23.8	19.3	23.8	19.3	19.3	
LIL Balla 00 (AVV3)	^	Nominal	22.8	18.3	22.8	18.3	18.3	
LTE Band 4 (AWS)	Α	Max Allowed Power	23.8	19.3	23.8	19.3	19.3	
LIL Balla 4 (AVV3)	^	Nominal	22.8	18.3	22.8	18.3	18.3	
LTE Band 4 (AWS)	F	Max Allowed Power	22.0	22.0	17.0	17.0	22.0	
LIL Balla 4 (AVV3)	!	Nominal	21.0	21.0	16.0	16.0	21.0	
LTE Band 25 (PCS)	Α	Max Allowed Power	23.5	19.0	23.5	19.0	19.0	
LTL Balla 25 (FC5)	^	Nominal	22.5	18.0	22.5	18.0	18.0	
LTE Band 2 (PCS)	Α	Max Allowed Power	23.5	19.0	23.5	19.0	19.0	
LTL Balla 2 (FCS)	^	Nominal	22.5	18.0	22.5	18.0	18.0	
LTE Band 41(PC3)	В	Max Allowed Power	25.0	23.0	25.0	23.0	23.0	
LIL Dalla 41(FC3)	ь	Nominal	24.0	22.0	24.0	22.0	22.0	
LTE Band 41 (PC2)	В	Max Allowed Power	26.5	23.0	26.5	23.0	23.0	
LIL Dalla 41 (FCZ)	В	Nominal	25.5	22.0	25.5	22.0	22.0	

For LTE TDD, the above powers listed are TDD burst average values.

			Modulated Average Output Power (in dBm)						
Mode / Band	Antenna		Maximum	Proximity Sensor Active	RCV Mode Active	Hotspot Mode Active	Earjack Active		
ND Dand of (Call)	Α	Max Allowed Power	24.0	24.0	24.0	24.0	24.0		
NR Band n5 (Cell)		Nominal	23.0	23.0	23.0	23.0	23.0		
NP Pand nee (ANS)	^	Max Allowed Power	25.0	21.0	25.0	21.0	21.0		
NR Band n66 (AWS)	Α	Nominal	24.0	20.0	24.0	20.0	20.0		
NR Band n66 (AWS)	F	Max Allowed Power	23.0	23.0	19.0	23.0	23.0		
		Nominal	22.0	22.0	18.0	22.0	22.0		

FCC ID: A3LSMS901E	Proud to be past of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dage 6 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 6 of 107

1.3.2 2.4 GHz Maximum SISO/MIMO WLAN Output Power

Note: Targets for 802.11ax RU operations can be found in Appendix J

								IEEE 8	02.11	.11 (in dBm)								
					SIS	80								MO				
Mode	de Band Antenna 1 & Antenna 2							- MIMO										
		b		g		n		ax (SU)	b		g (CDD + ST	BC)	n (CDD+STBC,	SDM)	ax (SU (CDD+STBC,		
	mum / al Power	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	
2.4 GHz	2.45	19.0	18.0	18.0	17.0	18.0	17.0	18.0	17.0	22.0	21.0	21.0	20.0	21.0	20.0	21.0	20.0	
WIFI	GHz	ch. 12: 12.0 ch. 13: 6.0		ch. 12: 12.0 ch. 13: 6.0	11.0	ch. 11: 16.5 ch. 12: 12.0 ch. 13: 6.0	11.0	ch. 11: 16.5 ch. 12: 12.0 ch. 13: 6.0	11.0			ch. 12: 15.0 ch. 13: 9.0	14.0	1	14.0	ch. 12: 15.0	14.0	

1.3.3 2.4 GHz Reduced WLAN Output Powers

Note: Targets for 802.11ax RU operations can be found in Appendix J

The below table is applicable in the following conditions:

- RCV Active
- Simultaneous conditions with 5 GHz WLAN and/or 5G NR
- RCV Active during simultaneous conditions with 5GHz WLAN and/or 5G NR

		ouvo aa						IEEE 80	2.11 (ir	n dBm)							
l					SISC)											
Mode	Band			Antenn	na 1 & A	Antenna 2							MII	МО			
		b g				n ax (SU)				b g (CDD + STBC)			3C)	n (CDD+STBC,	SDM)	ax (SU) (CDD+STBC,	
	mum / al Power	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.	Max	Nom.
2.4 GHz	0 45 CLI-	15.0 14.0 15.0 14.0 15.0 14.0 15.0 1 15.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							14.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	17.0
WIFI	2.45 GHZ	ch. 12: 12.0 ch. 13: 6.0	11.0 5.0	ch. 12: 12.0 ch. 13: 6.0		ch. 12: 12.0 ch. 13: 6.0		ch. 12: 12.0 ch. 13: 6.0		ch. 12: 15.0 ch. 13: 9.0				ch. 12: 15.0 ch. 13: 9.0		ch. 12: 15.0 ch. 13: 9.0	

	FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dags 7 of 107
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 7 of 107
© 202	1 PCTEST.				REV 21.4 M

5 GHz Maximum SISO/MIMO WLAN Output Power 1.3.4

Note: Targets for 802.11ax RU operations can be found in Appendix J

1010.	. a.g	0.0 10.	002.1	Tax Tte		11 (in dBm)	5411 5 5	Tourid	,	IEEE 802.11 (in dBm)									
					SIS Antenna 1 &	SO & Antenna 2							МІ	МО					
Mode	Band	i	a	n		ac		ax (ax (SU)		a · STBC)		n TBC, SDM)	(CDD + S	ac TBC, SDM)		(SU) TBC, SDM)		
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum		
	UNII-1	17.0	18.0	17.0 Ch. 36 16.0	18.0 Ch. 36 17.0	17.0 Ch. 36 16.0	18.0 Ch. 36 17.0	17.0 Ch. 36 16.0	18.0 Ch. 36 17.0	20.0	21.0	20.0 Ch. 36 19.0	21.0	20.0 Ch. 36 19.0	21.0 Ch. 36 20.0	20.0 Ch. 36 19.0	21.0 Ch. 36 20.0		
5 GHz	UNII-2A	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0		
(20MHz BW)	UNII-2C	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0		
D)	UNII-3	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0		
	UNII-4	17.0	18.0	17.0	18.0	17.0	18.0	17.0	18.0	20.0	21.0	20.0	21.0	20.0	21.0	20.0	21.0		
	UNII-1			17.0	18.0	17.0	18.0	17.0	18.0			20.0	21.0	20.0	21.0	20.0	21.0		
5 GHz	UNII-2A			17.0	18.0	17.0	18.0	17.0	18.0			20.0	21.0	20.0	21.0	20.0	21.0		
WIFI (40MHz	UNII-2C			17.0	18.0	17.0	18.0	17.0	18.0			20.0	21.0	20.0	21.0	20.0	21.0		
BW)	UNII-3			17.0	18.0	17.0	18.0	17.0	18.0			20.0	21.0	20.0	21.0	20.0	21.0		
	UNII-4			17.0	18.0	17.0	18.0	17.0	18.0			20.0	21.0	20.0	21.0	20.0	21.0		
	UNII-1					17.0	18.0	17.0	18.0					20.0	21.0	20.0	21.0		
						Ch. 42 16.0	Ch. 42 17.0	Ch. 42 16.0	Ch. 42 17.0					Ch. 42 19.0	Ch. 42 20.0	Ch. 42 19.0	Ch. 42 20.0		
5 GHz WIFI	UNII-2A					17.0	18.0	17.0	18.0					20.0	21.0	20.0	21.0		
(80MHz BW)	UNII-2C					17.0	18.0	17.0	18.0					20.0	21.0	20.0	21.0		
,	UNII-3					17.0	18.0	17.0	18.0					20.0	21.0	20.0	21.0		
	UNII-4					17.0	18.0	17.0	18.0					20.0	21.0	20.0	21.0		

FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
Document S/N:	Test Dates:	DUT Type:		Page 8 of 107	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 6 01 107	

1.3.5 5 GHz Reduced WLAN Output Powers

Note: Targets for 802.11ax RU operations can be found in Appendix J

The below table is applicable in the following conditions:

• Simultaneous conditions with 2.4 GHz WLAN and/or 5G NR

					IEEE 802.1	1 (in dBm)							IEEE 802.1	1 (in dBm)				
					SIS Antenna 1 8					МІМО								
Mode	Band	á	a	n		ac		ax (ax (SU)		a - STBC)	n (CDD + STBC, SDM)		ac (CDD + STBC, SDM)			(SU) TBC, SDM)	
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	
5 GHz	UNII-1	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0	15.0	16.0	15.0	16.0	15.0	16.0	15.0	16.0	
WIFI	UNII-2A	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0	15.0	16.0	15.0	16.0	15.0	16.0	15.0	16.0	
(20MHz	UNII-2C	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0	15.0	16.0	15.0	16.0	15.0	16.0	15.0	16.0	
BW)	UNII-3	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0	15.0	16.0	15.0	16.0	15.0	16.0	15.0	16.0	
	UNII-4	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0	15.0	16.0	15.0	16.0	15.0	16.0	15.0	16.0	
5 GHz	UNII-1			12.0	13.0	12.0	13.0	12.0	13.0			15.0	16.0	15.0	16.0	15.0	16.0	
WIFI	UNII-2A			12.0	13.0	12.0	13.0	12.0	13.0			15.0	16.0	15.0	16.0	15.0	16.0	
(40MHz	UNII-2C			12.0	13.0	12.0	13.0	12.0	13.0			15.0	16.0	15.0	16.0	15.0	16.0	
BW)	UNII-3			12.0	13.0	12.0	13.0	12.0	13.0			15.0	16.0	15.0	16.0	15.0	16.0	
	UNII-4			12.0	13.0	12.0	13.0	12.0	13.0			15.0	16.0	15.0	16.0	15.0	16.0	
5 GHz	UNII-1					12.0	13.0	12.0	13.0					15.0	16.0	15.0	16.0	
WIFI	UNII-2A					12.0	13.0	12.0	13.0					15.0	16.0	15.0	16.0	
(80MHz	UNII-2C					12.0	13.0	12.0	13.0					15.0	16.0	15.0	16.0	
BW)	UNII-3					12.0	13.0	12.0	13.0					15.0	16.0	15.0	16.0	
	UNII-4					12.0	13.0	12.0	13.0					15.0	16.0	15.0	16.0	

The below table is applicable in the following conditions:

RCV Active

• RCV Active during simultaneous conditions with 2.4 GHz WLAN and/or 5G NR

				J	IEEE 802.1	1 (in dBm)					/ V L / (1 4		IEEE 802.1				
					SIS Antenna 1 &								MII	MO			
Mode	Band	;	a	1	n	а	С	ax (SU)		a - STBC)	r (CDD + ST	n TBC, SDM)		ac TBC, SDM)		(SU) TBC, SDM)
		Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
	UNII-1	9.0	10.0	9.0	10.0	9.0	10.0	9.0	10.0	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0
5 GHz	UNII-2A	9.0	10.0	9.0	10.0	9.0	10.0	9.0	10.0	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0
WIFI (20MHz	UNII-2C	9.0	10.0	9.0	10.0	9.0	10.0	9.0	10.0	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0
BW)	UNII-3	9.0	10.0	9.0	10.0	9.0	10.0	9.0	10.0	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0
	UNII-4	9.0	10.0	9.0	10.0	9.0	10.0	9.0	10.0	12.0	13.0	12.0	13.0	12.0	13.0	12.0	13.0
	UNII-1			9.0	10.0	9.0	10.0	9.0	10.0			12.0	13.0	12.0	13.0	12.0	13.0
5 GHz	UNII-2A			9.0	10.0	9.0	10.0	9.0	10.0			12.0	13.0	12.0	13.0	12.0	13.0
WIFI (40MHz	UNII-2C			9.0	10.0	9.0	10.0	9.0	10.0			12.0	13.0	12.0	13.0	12.0	13.0
BW)	UNII-3			9.0	10.0	9.0	10.0	9.0	10.0			12.0	13.0	12.0	13.0	12.0	13.0
	UNII-4			9.0	10.0	9.0	10.0	9.0	10.0			12.0	13.0	12.0	13.0	12.0	13.0
	UNII-1					9.0	10.0	9.0	10.0					12.0	13.0	12.0	13.0
5 GHz	UNII-2A					9.0	10.0	9.0	10.0					12.0	13.0	12.0	13.0
WIFI (80MHz	UNII-2C					9.0	10.0	9.0	10.0					12.0	13.0	12.0	13.0
BW)	UNII-3					9.0	10.0	9.0	10.0					12.0	13.0	12.0	13.0
	UNII-4					9.0	10.0	9.0	10.0					12.0	13.0	12.0	13.0

	FCC ID: A3LSMS901E	PCTEST* Proud to be post of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Domo 0 of 107
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 9 of 107
© 202	1 PCTEST.				REV 21.4 M

2.4 GHz Maximum Bluetooth Output Power 1.3.6

Mode	Single A	Antenna
	Nominal	Maximum
Bluetooth (in dBm)	15.0	16.0
Bluetooth EDR (in dBm)	10.5	11.5
Bluetooth LE 1/2Mbps (in dBm)	15.0	16.0
Bluetooth LE 125/500 kbps (in dBm)	10.0	11.0

1.3.7 2.4 GHz Reduced Bluetooth Output Power

The below table is applicable in the following conditions:

- **RCV** Active
- During simultaneous conditions with 5 GHz WLAN and/or 5G NR
- RCV Active during simultaneous conditions with 5 GHz WLAN and/or 5G NR

Mode	Single A	Antenna
	Nominal	Maximum
Bluetooth (in dBm)	12.0	13.0
Bluetooth EDR (in dBm)	10.5	11.5
Bluetooth LE 1/2Mbps (in dBm)	12.0	13.0
Bluetooth LE 125/500 kbps (in dBm)	10.0	11.0

	FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dogg 40 of 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 10 of 107
© 202	1 PCTEST.				REV 21.4 M

1.4 DUT Antenna Locations

The overall dimensions of this device are $> 9 \times 5$ cm. A diagram showing the location of the device antennas can be found in Appendix E. Since the display diagonal dimension of this device is > 150 mm and < 200 mm, it is considered a "phablet."

Table 1-1
Device Edges/Sides for SAR Testing - Legacy

Device Edges/Sides for SAR Testing - Legacy							
Back	Front	Тор	Bottom	Right	Left		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	Yes	No	Yes	No		
Yes	Yes	No	Yes	Yes	Yes		
Yes	Yes	No	Yes	No	Yes		
Yes	Yes	Yes	No	No	Yes		
Yes	Yes	Yes	No	No	Yes		
Yes	Yes	No	No	No	Yes		
Yes	Yes	Yes	No	No	Yes		
Yes	Yes	No	No	No	Yes		
	Back Yes	Back Front Yes Yes Yes Yes	Back Front Top Yes Yes No Yes Yes Yes Yes Yes Yes	Back Front Top Bottom Yes Yes No Yes Yes Yes No No Yes Yes No No <td>Back Front Top Bottom Right Yes Yes No Yes Yes Yes Yes No Yes No Yes Yes No No No Yes Yes No <</td>	Back Front Top Bottom Right Yes Yes No Yes Yes Yes Yes No Yes No Yes Yes No No No Yes Yes No <		

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing. When wireless router mode is enabled, U-NII-1, U-NII-2A, U-NII-2C, and U-NII-4 operations are disabled. Some edges were additionally evaluated per manufacturer's request.

Table 1-2
Device Edges/Sides for SAR Testing - NR

Mode	Back	Front	Тор	Bottom	Right	Left
NR Band n5 (Cell)	Yes	Yes	No	Yes	Yes	Yes
NR Band n66 (AWS) Antenna A	Yes	Yes	No	Yes	Yes	Yes
NR Band n66 (AWS) Antenna F	Yes	Yes	Yes	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for wireless router SAR or phablet SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v02r01 Section III and FCC KDB Publication 648474 D04v01r03. The distances between the transmit antennas and the edges of the device are included in the filing.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in Appendix E.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 11 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	rage 11 01 107

© 2021 PCTEST. REV 21.4 I

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, 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.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D01v06 4.3.2 procedures.

Table 1-2
Simultaneous Transmission Scenarios

	Ommananooao	Hun	0	0.0	-	1141100
	0.11.7 10.7 1		Body-Worn	Wireless		
No.	Capable Transmit Configuration	Head	Accessory	Router	Phablet	Notes
1	GSM voice + 2.4 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
	GSM voice + 5 GHz WLAN Ant 1	Yes	Yes	N/A	Yes	
3	GSM voice + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
4	GSM voice + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	N/A	Yes	
5	GSM voice + 2.4 GHz Bluetooth	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
6	GSM voice + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
7	GSM voice + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
8	GSM voice + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
	GSM voice + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz					
9	WLAN Ant 1	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
	GSM voice + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz	Yes^	Yes	N/A	Yes	^ Bluetooth Tethering is considered
	WLAN MIMO	103	163	N/A	103	blactooth rethering is considered
11	UMTS + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
	UMTS + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
13			Yes	Yes	Yes	
	UMTS + 5 GHz WLAN MIMO	Yes				
	UMTS + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
15	UMTS + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
16	UMTS + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2	Yes^	Yes	γρς^	Yes	^ Bluetooth Tethering is considered
	UMTS + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
18	UMTS + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
	UMTS + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN					L
	Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
	UMTS + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
~	MIMO	ı	1			
21	LTE + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
	LTE + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
23	LTE + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
24	LTE + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
	LTE + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
26				Yes^	Yes	bidetootii retileriiig is considered
	LTE + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2	Yes^	Yes			^ Bluetooth Tethering is considered
27	LTE + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
28	LTE + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
		100				
29	LTE + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
	LTE + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN					
30	МІМО	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
		W	Yes	N/A	Yes	
	LTE + NR	Yes				
32	LTE + NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
33	LTE + NR + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
	LTE + NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
	LTE + NR + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
	LTE + NR + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
37	LTE + NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
38	LTE + NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
	LTE + NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
40	LTE + NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
40	Ant 1	ies	l ies	162	162	bidetootii retriering is considered
	LTE + NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN					
		Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
	MIMO					
42	NR + 2.4 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
43	NR + 5 GHz WLAN Ant 1	Yes	Yes	Yes	Yes	
_	NR + 5 GHz WLAN MIMO	Yes	Yes	Yes	Yes	
	NR + 2.4 GHz WLAN MIMO + 5 GHz WLAN MIMO					
		Yes	Yes	Yes		i e e e e e e e e e e e e e e e e e e e
46					Yes	
46	NR + 2.4 GHz WLAN MIMO + 5 GHZ WLAN MIMO NR + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
	NR + 2.4 GHz Bluetooth	Yes^	Yes	Yes^	Yes	^ Bluetooth Tethering is considered
47	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2	Yes^ Yes^	Yes Yes	Yes^ Yes^	Yes Yes	^ Bluetooth Tethering is considered
47 48	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1	Yes^ Yes^ Yes^	Yes Yes Yes	Yes^ Yes^ Yes^	Yes Yes Yes	Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2	Yes^ Yes^	Yes Yes	Yes^ Yes^	Yes Yes	^ Bluetooth Tethering is considered
47 48 49	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO	Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48 49	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1	Yes^ Yes^ Yes^	Yes Yes Yes	Yes^ Yes^ Yes^	Yes Yes Yes	Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48 49 50	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48 49 50	NR + 2.4 GHz Bluetooth NR + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMIO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	A Bluetooth Tethering is considered
47 48 49 50	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1	Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes	Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48 49 50	NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5. GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5. GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5. GHz WLAN MIMIO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 MMMO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes	A Bluetooth Tethering is considered
47 48 49 50 51	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 2.6 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GMSKJEGGE 4.2.4 GHz WLAN MIMO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes Yes	A Bluetooth Tethering is considered
47 48 49 50 51 52 53	NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MINIO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 OGMSZEDGE + 2.4 GHz WLAN MINIO GMSZEDGE + 2.4 GHz WLAN MINIO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A	Yes Yes Yes Yes Yes Yes Yes N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes Yes	Yes	A Bluetooth Tethering is considered
47 48 49 50 51 52 53	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 2.6 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GMSKJEGGE 4.2.4 GHz WLAN MIMO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes Yes	A Bluetooth Tethering is considered
47 48 49 50 51 52 53 54	NR + 2.4 GHz Bluetooth NR + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GRISZEDEE + 5 GHz WLAN MIMO GRISZEDEE + 5 GHz WLAN MIMO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A	Yes Yes Yes Yes Yes Yes Yes N/A N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes Yes Yes Yes Yes	Yes	A Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MINIO NR + 2.4 GHz Bluetooth + 2.6 GHz WLAN MINIO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 OFFS/EDGE + 2.4 GHz WLAN MINIO OFFS/EDGE + 5 GHz WLAN MINIO OFFS/EDGE + 6 GHz WLAN MINIO + 5 GHz WLAN MINIO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A N/A	Yes Yes Yes Yes Yes Yes Yes N/A N/A N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes Yes Yes Yes Yes Yes Yes Yes	Yes	A Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GMSYEDGE + 3 GHz Bluetooth + 2.4 GHz WLAN MIMO GMSYEDGE + 5 GHz WLAN MIMO GMSYEDGE + 5 GHz WLAN MIMO GMSYEDGE + 5 GHz WLAN MIMO GMSYEDGE + 2.4 GHz WLAN MIMO - 5 GHz WLAN MIMO GMSYEDGE + 2.4 GHZ WLAN MIMO - 5 GHz WLAN MIMO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A N/A N/A	Yes Yes Yes Yes Yes Yes Yes Yes N/A N/A N/A N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GRS/EDGE + 2.4 GHz Bluetooth	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A N/A	Yes Yes Yes Yes Yes Yes Yes N/A N/A N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes Yes Yes Yes Yes Yes Yes Yes	Yes	A Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GRS/EDGE + 2.4 GHz Bluetooth	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A N/A N/A N/A N/A N/A	Yes Yes Yes Yes Yes Yes Yes Yes N/A N/A N/A N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57 58	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 2.5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GMSZEDGE + 2.4 GHZ WLAN	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A N/A N/A N/A N/A N/A N/A	Yes Yes Yes Yes Yes Yes Yes N/A N/A N/A N/A N/A N/A N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	A Bluetooth Tethering is considered Bluetooth Tethering is considered A Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57 58	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 GRRS/EDGE + 2.4 GHz WLAN MIMO GRRS/EDGE + 5 GHz WLAN MIMO GRRS/EDGE + 5 GHz WLAN MIMO GRRS/EDGE + 6 GHz Bluetooth GRRS/EDGE + 6 GHz Bluetooth + 5 GHz WLAN Ant 1 GRRS/EDGE + 6 GHz Bluetooth + 5 GHz WLAN Ant 2	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A N/A N/A N/A N/A N/A	Yes	Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57 58 59	NR + 2.4 GHz Bluetooth NR + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz WLENDAM + 1 NR + 2.4 GHz Bluetooth + 2.5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MMO GPRS/EDGE + 2.4 GHz WLAN MIMO GPRS/EDGE + 2.4 GHZ Bluetooth + 2.4 GHZ WLAN ANT 2 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIMO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57 58 59	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 GRRS/EDGE + 2.4 GHz WLAN MIMO GRRS/EDGE + 5 GHz WLAN MIMO GRRS/EDGE + 5 GHz WLAN MIMO GRRS/EDGE + 6 GHz Bluetooth GRRS/EDGE + 6 GHz Bluetooth + 5 GHz WLAN Ant 1 GRRS/EDGE + 6 GHz Bluetooth + 5 GHz WLAN Ant 2	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A N/A N/A N/A N/A N/A N/A N/A N/A	Yes Yes Yes Yes Yes Yes Yes N/A N/A N/A N/A N/A N/A N/A N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	A Bluetooth Tethering is considered Bluetooth Tethering is considered A Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57 58 59 60	NR + 2.4 GHz Bluetooth NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MIMO GPRS/EDGE + 2.4 GHz Bluetooth GPRS/EDGE + 2.4 GHz Bluetooth GPRS/EDGE + 5 GHz Bluetooth GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 2 GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1 GPRS/EDGE + 2.4 GHz Bluetooth + 5 GHz WLAN Ant 1	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ N/A	Yes Yes Yes Yes Yes Yes Yes N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered Bluetooth Tethering is considered
47 48 49 50 51 52 53 54 55 56 57 58 59 60	NR + 2.4 GHz Bluetooth NR + 2.4 GHz WLAN Ant 2 NR + 2.4 GHz WLENDAM + 1 NR + 2.4 GHz Bluetooth + 2.5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.5 GHz WLAN MIMO NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN Ant 1 NR + 2.4 GHz Bluetooth + 2.4 GHz WLAN Ant 2 + 5 GHz WLAN MMO GPRS/EDGE + 2.4 GHz WLAN MIMO GPRS/EDGE + 2.4 GHZ Bluetooth + 2.4 GHZ WLAN ANT 2 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIM 1 GPRS/EDGE + 2.4 GHZ Bluetooth + 5 GHZ WLAN MIMO	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^	Yes Yes Yes Yes Yes Yes Yes N/A	Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes^ Yes	Yes	A Bluetooth Tethering is considered B Bluetooth Tethering is considered B Bluetooth Tethering is considered B Bluetooth Tethering is considered

- 1. 2.4 GHz WLAN Antenna 1 and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
- 2. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN Hotspot scenario.

FCC ID: A3LSMS901E	Proud to be post of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 42 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 12 of 107

REV 21.4 M

- Per the manufacturer, WIFI Direct is not expected to be used in conjunction with a held-to-ear or bodyworn accessory voice call. Therefore, there are no simultaneous transmission scenarios involving WIFI direct beyond that listed in the above table.
- 4. 5 GHz Wireless Router is only supported for the U-NII-3 by S/W, therefore U-NII-1, U-NII2A, U-NII2C, and UNII-4 were not evaluated for wireless router conditions.
- 5. This device supports 2x2 MIMO Tx for WLAN 802.11a/b/g/n/ac/ax. 802.11a/b/g/n/ac/ax supports CDD and STBC and 802.11n/ac/ax additionally supports SDM.
- 6. This device supports VoWIFI.
- 7. This device supports Bluetooth Tethering.
- 8. This device supports VoLTE.
- 9. This device supports VoNR
- 10. LTE + 5G NR FR1 Scenarios are limited to EN-DC combinations with anchor bands as shown in the NR FR1 checklist.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB Publication 248227 D01v02r02.

This device supports channel 1-13 for 2.4 GHZ WLAN. However, because channel 12/13 targets are not higher than that of channels 1-11, default channels for SAR testing are determined per FCC KDB 248227 D01v02r02.

Since Wireless Router operations are not allowed by the chipset firmware using U-NII-1, U-NII-2A & U-NII-2C & U-NII-4 WIFI, only 2.4 GHz and U-NII-3 WIFI Hotspot SAR tests and combinations are considered for SAR with respect to Wireless Router configurations according to FCC KDB 941225 D06v02r01.

This device supports IEEE 802.11ax with the following features:

- a) Up to 80 MHz Bandwidth only for 5 GHz
- b) Up to 20 MHz Bandwidth only for 2.4 GHz
- c) No aggregate channel configurations
- d) 2 Tx antenna output
- e) Up to 1024 QAM is supported
- f) TDWR and Band gap channels are supported for 5 GHz
- g) MU-MIMO UL Operations are not supported

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the display diagonal dimension is greater than 150mm and less than 200mm. Phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Because wireless router operations are not supported for U-NII-1, U-NII-2A & U-NII-2C WLAN, U-NII-4 phablet SAR tests were performed. Phablet SAR was not evaluated for 2.4 GHz and U-NII-3 WLAN operations since wireless router 1g SAR was < 1.2 W/kg.

Per April 2019 TCB Workshop Notes, SAR testing was not required for 802.11ax when applying the initial test configuration procedures of KDB 248227, with 802.11ax considered a higher order 802.11 mode.

(B) Licensed Transmitter(s)

thereof, please contact INFO@PCTEST.COM.

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 13 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 13 01 107

© 2021 PCTEST.

REV 21.4 M
09/11/2019
© 2021 PCTEST. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying an microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

This device supports LTE Carrier Aggregation (CA) in the downlink. All uplink communications are identical to Release 8 specifications. Per FCC KDB Publication 941225 D05A v01r02, SAR for LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive. The downlink carrier aggregation exclusion analysis can be found in Appendix I.

Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the display diagonal dimension is greater than 150mm and less than 200mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.

This device supports downlink 4x4 MIMO operations for some LTE Bands. Per May 2017 TCB Workshop Notes, SAR for 4x4 DL MIMO was not needed since the maximum average output power in 4x4 DL MIMO mode was not more than 0.25 dB higher than the maximum output power with 4x4 DL MIMO inactive. Additionally, SAR for 4x4 MIMO Downlink Carrier Aggregation was not needed since the maximum average output power in 4x4 MIMO Downlink Carrier Aggregation mode was not more than 0.25 dB higher than the maximum output power with 4x4 MIMO Downlink and downlink carrier aggregation inactive.

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device supports both Power Class 2 (PC2) and Power Class 3 (PC3) for LTE Band 41. Per May 2017 TCB Workshop Notes, SAR tests were performed with Power Class 3 (given the specific UL/DL limitations for Power Class 2). Additionally, SAR testing for the power class 2 condition was evaluated for the highest configuration in Power Class 3 for each test configuration to confirm the results were scalable linearly (See Section 13)

NR implementation supports SA and NSA mode. In EN-DC mode, NR operates with the LTE Bands shown in the NR FR1 checklist acting as anchor bands. During EN-DC conditions, NR n66 switches to operate on Antenna F. SAR tests were performed separately on Antenna F for NR n66. Per FCC guidance, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors.

This device supports inter-band LTE Carrier Aggregation (CA) for LTE Bands 2, 4, 5, 12, and 66 with two component carriers in the uplink. For CA_2A-4A uplink conditions, LTE B4 operates using Antenna F. SAR tests were performed separately on Antenna F for LTE B4.

1.8 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01, D05v02r04, D05Av01r02, D06v02r01 (2G/3G/4G and Hotspot)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D01v06 (General SAR Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- FCC KDB Publication 648474 D04v01r03 (Phablet Procedures)
- FCC KDB Publication 616217 D04v01r02 (Proximity Sensor)
- October 2013 TCB Workshop Notes (GPRS Testing Considerations)
- May 2017 TCB Workshop Notes (LTE 4x4 Downlink MIMO, LTE Band 41 Power Class 2/3)

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 14 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	raye 14 01 107

- April 2018 TCB Workshop Notes (LTE Carrier Aggregation)
- April 2019 TCB Workshop Notes (IEEE 802.11ax, Dynamic Antenna Tuning)
- October 2018 TCB Workshop Notes (Inter-band Uplink Carrier Aggregation)

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 11.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Dago 15 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Page 15 of 107

	Ľ	TE Information					
Form Factor			Portable Handset				
requency Range of each LTE transmission band		LTE	Band 12 (699.7 - 715.3	MHz)			
			Band 17 (706.5 - 713.5				
			Band 13 (779.5 - 784.5				
		LTE Band 26 (Cell) (814.7 - 848.3 MHz)					
			and 5 (Cell) (824.7 - 848 166 (AWS) (1710.7 - 17				
			d 4 (AWS) (1710.7 - 17				
			25 (PCS) (1850.7 - 19				
			d 2 (PCS) (1850.7 - 190				
		LTE Band 41 (2498.5 - 2687.5 MHz)					
hannel Bandwidths			12: 1.4 MHz, 3 MHz, 5 N				
			E Band 17: 5 MHz, 10 M				
			E Band 13: 5 MHz, 10 N): 1.4 MHz, 3 MHz, 5 MH				
			Cell): 1.4 MHz, 3 MHz, 5				
		TE Band 66 (AWS): 1.	4 MHz, 3 MHz, 5 MHz, 1	0 MHz, 15 MHz, 20 Mi			
	L	TE Band 4 (AWS): 1.4	4 MHz, 3 MHz, 5 MHz, 1	0 MHz, 15 MHz, 20 MH	łz		
			4 MHz, 3 MHz, 5 MHz, 1				
			MHz, 3 MHz, 5 MHz, 10 11: 5 MHz, 10 MHz, 15 N		Z		
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High		
TE Band 12: 1.4 MHz		(23017)	707.5 (23095)		(23173)		
TE Band 12: 3 MHz		(23025)	707.5 (23095)		(23165)		
TE Band 12: 5 MHz		(23035)	707.5 (23095)		(23155)		
TE Band 12: 10 MHz	704 (2	23060)	707.5 (23095)	711 (:	23130)		
TE Band 17: 5 MHz		(23755)	710 (23790) 710 (23790)	713.5	(23825)		
TE Band 17: 10 MHz		709 (23780)			23800)		
TE Band 13: 5 MHz TE Band 13: 10 MHz		(23205)	782 (23230)		(23255)		
TE Band 26 (Cell): 1.4 MHz		/A (26697)	782 (23230) 831.5 (26865)	N/A			
TE Band 26 (Cell): 3 MHz		(26705)	831.5 (26865)	848.3 (27033) 847.5 (27025)			
TE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27025)			
TE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)			
TE Band 26 (Cell): 15 MHz	821.5 (26765)		831.5 (26865)	841.5 (26965)			
TE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)			
TE Band 5 (Cell): 3 MHz		(20415)	836.5 (20525)	847.5 (20635)			
TE Band 5 (Cell): 5 MHz		(20425)	836.5 (20525)	846.5 (20625) 844 (20600)			
TE Band 5 (Cell): 10 MHz TE Band 66 (AWS): 1.4 MHz		20450)	836.5 (20525)				
TE Band 66 (AWS): 3 MHz		(131979) (131987)	1745 (132322) 1745 (132322)	1779.3 (132665) 1778.5 (132657)			
TE Band 66 (AWS): 5 MHz		(131997)	1745 (132322)	1777.5 (132647)			
TE Band 66 (AWS): 10 MHz		132022)	1745 (132322)	1775 (132622)			
TE Band 66 (AWS): 15 MHz		(132047)	1745 (132322)		(132597)		
TE Band 66 (AWS): 20 MHz		132072)	1745 (132322)		132572)		
TE Band 4 (AWS): 1.4 MHz		(19957)	1732.5 (20175)		(20393)		
TE Band 4 (AWS): 3 MHz		(19965)	1732.5 (20175)		(20385)		
TE Band 4 (AWS): 5 MHz TE Band 4 (AWS): 10 MHz		(19975) (20000)	1732.5 (20175) 1732.5 (20175)		(20375)		
TE Band 4 (AWS): 15 MHz		(20025)	1732.5 (20175)		(20325)		
TE Band 4 (AWS): 20 MHz		20050)	1732.5 (20175)		(20300)		
TE Band 25 (PCS): 1.4 MHz		(26047)	1882.5 (26365)		(26683)		
TE Band 25 (PCS): 3 MHz	1851.5	(26055)	1882.5 (26365)	1913.5	(26675)		
TE Band 25 (PCS): 5 MHz		(26065)	1882.5 (26365)		(26665)		
TE Band 25 (PCS): 10 MHz		26090)	1882.5 (26365)		(26640)		
TE Band 25 (PCS): 15 MHz TE Band 25 (PCS): 20 MHz		(26115)	1882.5 (26365)		(26615)		
TE Band 2 (PCS): 1.4 MHz		(26140) (18607)	1882.5 (26365) 1880 (18900)		(26590) (19193)		
TE Band 2 (PCS): 3 MHz		(18615)	1880 (18900)		(19185)		
TE Band 2 (PCS): 5 MHz		(18625)	1880 (18900)		(19175)		
TE Band 2 (PCS): 10 MHz		18650)	1880 (18900)	1905 ((19150)		
TE Band 2 (PCS): 15 MHz	1857.5	(18675)	1880 (18900)	1902.5	(19125)		
TE Band 2 (PCS): 20 MHz		18700)	1880 (18900)		(19100)		
TE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)		
TE Band 41: 10 MHz TE Band 41: 15 MHz	2506 (39750) 2506 (39750)	2549.5 (40185) 2549.5 (40185)	2593 (40620) 2593 (40620)	2636.5 (41055) 2636.5 (41055)	2680 (41490) 2680 (41490)		
TE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)		
E Category	,/		LUE Cat 20, UL UE Cat				
odulations Supported in UL			K, 16QAM, 64QAM, 256				
TE MPR Permanently implemented per 3GPP TS			\/=a				
6.101 section 6.2.3~6.2.5? (manufacturer attestation			YES				
be provided) -MPR (Additional MPR) disabled for SAR Testing?			YES				
TE Carrier Aggregation Possible Combinations	The ted	chnical description incl	udes all the possible car	rier aggregation combi	nations		
TE Additional Information	features as shown in communications are	Appendix I. All uplink of done on the PCC. The	on 3GPP Release 15. It communications are idea following LTE Release 1 ling, eMBMS, Cross-Ca	ntical to the Release 8 : 5 Features are not sup	Specifications. Upli ported: Relay, Hetl		

FCC ID: A3LSMS901E	PCTEST* Proud to be part of (8) element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 16 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	1 age 10 of 107

© 2021 PCTEST.

REV 21.4 M

NR Information							
Form Factor		Portable Handset					
Frequency Range of each NR transmission band		NR Band n5 (Cell) (826.5 - 846.5 MHz)					
		NR Band n66 (AWS) (1712.5 - 1777.5 MHz)					
Channel Bandwidths	NR	NR Band n5 (Cell): 5 MHz, 10 MHz, 15 MHz, 20 MHz					
	NR E	NR Band n66 (AWS): 5 MHz, 10 MHz, 15 MHz, 20 MHz					
Channel Numbers and Frequencies (MHz)							
NR Band n5 (Cell): 5 MHz	826.5 (165300)	836.5 (167300)	846.5 (169300)				
NR Band n5 (Cell): 10 MHz	829 (165800)	836.5 (167300)	844 (168800)				
NR Band n5 (Cell): 15 MHz	831.5 (166300)	836.5 (167300)	841.5 (168300)				
NR Band n5 (Cell): 20 MHz	834 (166800)	836.5 (167300)	839 (167800)				
NR Band n66 (AWS): 5 MHz	1712.5 (342500)	1745 (349000)	1777.5 (355500)				
NR Band n66 (AWS): 10 MHz	1715 (343000)	1745 (349000)	1775 (355000)				
NR Band n66 (AWS): 15 MHz	1717.5 (343500)	1745 (349000)	1772.5 (354500)				
NR Band n66 (AWS): 20 MHz	1720 (344000)	1745 (349000)	1770 (354000)				
SCS for NR Band n5/n66		15 kHz					
Modulations Supported in UL		DFT-s-OFDM: 11/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM					
A-MPR (Additional MPR) disabled for SAR Testing?		YES					
EN-DC Carrier Aggregation Possible Combinations	The technical desc	cription includes all the possible carrier aggrega	ation combinations				
LTE Anchor Bands for NR Band n5 (Cell)		LTE Band 2/66					
LTE Anchor Bands for NR Band n66 (AWS)		LTE Band 2/5/12/13					

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 17 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 17 01 107

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996 and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1 SAR Mathematical Equation

$$SAR = \frac{d}{dt} \left(\frac{dU}{dm} \right) = \frac{d}{dt} \left(\frac{dU}{\rho dv} \right)$$

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \frac{\sigma \cdot E^2}{\rho}$$

where:

 σ = conductivity of the tissue-simulating material (S/m)

 ρ = mass density of the tissue-simulating material (kg/m³)

E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo 19 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 18 of 107

© 2021 PCTEST. REV 21.4 N

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

- 1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013.
- 2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.

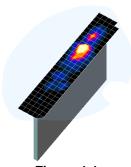


Figure 4-1 Sample SAR Area Scan

- 3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1) and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
- 4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

Table 4-1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

		eximum Area Scan Maximum Zoom Scan		Maximum Zoom Scan Spatial Resolution (mm)			
Frequency	ency Resolution (mm) Resolution (mm) $(\Delta x_{200m}, \Delta y_{200m})$		Uniform Grid	Graded Grid		Volume (mm) (x,y,z)	
	Turcus Furcus	100117	Δz _{zoom} (n)	Δz _{zoom} (1)*	Δz _{zoom} (n>1)*	, ,,, ,	
≤2 GHz	≤15	≤8	≤5	≤4	$\leq 1.5*\Delta z_{zoom}(n-1)$	≥ 30	
2-3 GHz	≤12	≤5	≤5	≤4	$\leq 1.5*\Delta z_{zoom}(n-1)$	≥ 30	
3-4 GHz	≤12	≤5	≤4	≤3	$\leq 1.5*\Delta z_{zoom}(n-1)$	≥ 28	
4-5 GHz	≤ 10	≤4	≤3	≤2.5	$\leq 1.5*\Delta z_{zoom}(n-1)$	≥ 25	
5-6 GHz	≤ 10	≤4	≤2	≤2	$\leq 1.5*\Delta z_{200m}(n-1)$	≥22	

^{*}Also compliant to IEEE 1528-2013 Table 6

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dago 10 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 19 of 107

5.1 EAR REFERENCE POINT

Figure 5-2 shows the front, back and side views of the SAM Twin Phantom. The point "M" is the reference point for the center of the mouth, "LE" is the left ear reference point (ERP), and "RE" is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 5-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 5-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

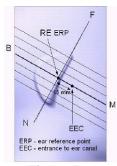


Figure 5-1 Close-Up Side view of ERP

5.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the acoustic output located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Figure 5-3). The acoustic output was than located at the same level as the center of the ear reference point. The test device was positioned so that the "vertical centerline" was bisecting the front surface of the handset at its top and bottom edges, positioning the "ear reference point" on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 5-2 Front, back and side view of SAM Twin Phantom

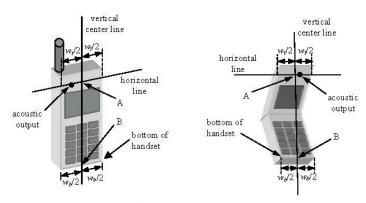


Figure 5-3
Handset Vertical Center & Horizontal Line Reference Points

FCC ID: A3LSMS901E	Proud to be post of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 20 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 20 of 107

© 2021 PCTEST. REV 21.4 M 09/11/2019

6.1 **Device Holder**

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity $\varepsilon = 3$ and loss tangent $\delta = 0.02$.

6.2 **Positioning for Cheek**

The test device was positioned with the device close to the surface of the phantom such that point A is on 1. the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 6-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.



Figure 6-1 Front, Side and Top View of Cheek Position

- 2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the pinna.
- 3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the reference plane.
- The phone was then rotated around the vertical centerline until the phone (horizontal line) was 4. symmetrical was respect to the line NF.
- 5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the device contact with the ear, the device was rotated about the NF line until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 6-2).

6.3 Positioning for Ear / 15° Tilt

With the test device aligned in the "Cheek Position":

- 1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15degrees.
- The phone was then rotated around the horizontal line by 15 degrees. 2.
- While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the handset touched the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. In this situation, the tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 6-2).

	FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dogo 24 of 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 21 of 107
© 202	1 PCTEST.				REV 21.4 M



Figure 6-2 Front, Side and Top View of Ear/15° Tilt
Position

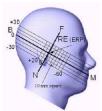


Figure 6-3
Side view w/ relevant markings

6.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones. Per IEEE 1528-2013, a rotated SAM phantom is necessary to allow probe access to such regions. Both SAM heads of the TwinSAM-Chin20 are rotated 20 degrees around the NF line. Each head can be removed from the table for emptying and cleaning.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document FCC KDB Publication 648474 D04v01r03. The SAR required in these regions of SAM should be measured using a flat phantom. The phone should be positioned with a separation distance of 4 mm between the ear reference point (ERP) and the outer surface of the flat phantom shell. While maintaining this distance at the ERP location, the low (bottom) edge of the phone should be lowered from the phantom to establish the same separation distance between the peak SAR location identified by the truncated partial SAR distribution measured with the SAM phantom. The distance from the peak SAR location to the phone is determined by the straight line passing perpendicularly through the phantom surface. When it is not feasible to maintain 4 mm separation at the ERP while also establishing the required separation at the peak SAR location, the top edge of the phone will be allowed to touch the phantom with a separation < 4 mm at the ERP. The phone should not be tilted to the left or right while placed in this inclined position to the flat phantom.

6.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 6-4). Per FCC KDB Publication 648474 D04v01r03, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation

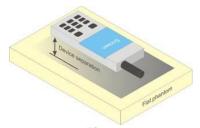


Figure 6-4
Sample Body-Worn Diagram

distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not

FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 22 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 22 of 107

© 2021 PCTEST. REV 21.4 I

contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

Extremity Exposure Configurations 6.6

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions: i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. The 1g body and 10g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01v06 should be applied to determine SAR test requirements.

Per KDB Publication 447498 D01v06, Cell phones (handsets) are not normally designed to be used on extremities or operated in extremity only exposure conditions. The maximum output power levels of handsets generally do not require extremity SAR testing to show compliance. Therefore, extremity SAR was not evaluated for this device.

Wireless Router Configurations 6.7

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

6.8 **Phablet Configurations**

For smart phones with a display diagonal dimension > 150 mm or an overall diagonal dimension > 160 mm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that

	FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dogg 22 of 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 23 of 107
© 202	1 PCTEST.				REV 21.4 M

support voice calls next to the ear, the phablets procedures outlined in KDB Publication 648474 D04v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worn accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna <=25 mm from that surface or edge, in direct contact with the phantom, for 10g SAR. The UMPC mini-tablet 1g SAR at 5 mm is not required. When hotspot mode applies, 10g SAR is required only for the surfaces and edges with hotspot mode 1g SAR > 1.2 W/kg.

6.9 Proximity Sensor Considerations

This device uses a power reduction mechanism to reduce output powers in certain use conditions when the device is used close the user's body.

When the device's antenna is within a certain distance of the user, the sensor activates and reduces the maximum allowed output power. However, the sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, additional evaluation is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level. FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at these additional test positions. Sensor triggering distance summary data is included in Appendix G.

The sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the sensor entirely covers the antennas.

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 24 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 24 of 107

I PCTEST. REV 21.4 I 09/11/201

7 RF EXPOSURE LIMITS

7.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 7-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

	UNCONTROLLED ENVIRONMENT	CONTROLLED ENVIRONMENT		
	General Population (W/kg) or (mW/g)	Occupational (W/kg) or (mW/g)		
Peak Spatial Average SAR _{Head}	1.6	8.0		
Whole Body SAR	0.08	0.4		
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20		

- 1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
- 2. The Spatial Average value of the SAR averaged over the whole body.
- The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

	FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		D 05 -4407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 25 of 107
© 202	1 PCTEST.				REV 21.4 M

09/11/2019

8 FCC MEASUREMENT PROCEDURES

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

8.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

8.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is \leq 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is \leq 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

8.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01 "3G SAR Measurement Procedures."

The device is placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test are evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device is tested throughout the SAR test at maximum output power, the SAR measurement system measures a "point SAR" at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviates by more than 5%, the SAR test and drift measurements are repeated.

8.4 SAR Measurement Conditions for UMTS

8.4.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

	FCC ID: A3LSMS901E	Proud to be post of element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dogg 26 of 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 26 of 107
© 202	1 PCTEST.				REV 21.4 M

REV 21.4 M 09/11/2019

8.4.2 **Head SAR Measurements**

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's". The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

8.4.3 **Body SAR Measurements**

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s". The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCH₀ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or DPDCH_n, for the highest reported SAR configuration in 12.2 kbps RMC.

8.4.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

SAR Measurements with Rel 6 HSUPA 8.4.5

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Subtest 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

SAR Measurement Conditions for DC-HSDPA 8.4.6

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

8.5 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r04 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo 27 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 27 of 107

8.5.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

8.5.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

8.5.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

8.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

- a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
 - i. The required channel and offset combination with the highest maximum output power is required for SAR.
 - ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
 - iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
- c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.</p>
- d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.</p>

8.5.5 TDD

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05v02r04. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05v02r04. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

8.5.6 Downlink Only Carrier Aggregation

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink

	FCC ID: A3LSMS901E	Proud to be part of @ element	SAR EVALUATION REPORT	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:	Dogg 20 of 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Page 28 of 107
n	1 DOTEST			DEV/ 21 / M

REV 21.4 M 09/11/2019 carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band. Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for downlink only carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive.

8.6 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

8.6.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

8.6.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

8.6.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission

FCC ID: A3LSMS901E	Proud to be part of @ element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 29 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Page 29 01 107

© 2021 PCTEST. REV 21.4 09/11/20:

mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel: i.e., all channels require testing.

2.4 GHz 802.11 g/n/ax OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.6 **OFDM Transmission Mode and SAR Test Channel Selection**

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. Per April 2019 TCB Workshop guidance, 802.11ax was considered the highest order 802.11 mode. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

8.6.7 **Initial Test Configuration Procedure**

For OFDM, an initial test configuration is determined for each frequency band and aggregated band. according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest

	FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dogg 20 of 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 30 of 107
© 202	1 PCTEST.				REV 21.4 M

802.11 mode is considered for SAR measurements (See Section 8.6.6). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8.6.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 31 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 31 01 107

9 RF CONDUCTED POWERS

9.1 **GSM Conducted Powers**

Table 9-1 **Maximum Conducted Power**

		. IV	laximum B	urst-Aver							
		Voice		GPRS/EL	DGE Data MSK)		EDGE Data (8-PSK)				
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot	
	128	31.81	31.78	31.20	29.53	27.44	26.28	24.85	22.68	21.62	
GSM 850	190	31.92	31.89	31.40	29.58	27.55	26.53	24.81	22.64	21.67	
	251	31.91	31.95	31.04	29.60	26.78	26.48	24.58	22.39	21.38	
	512	29.36	29.45	27.94	25.91	23.84	25.61	24.60	22.61	21.82	
GSM 1900	661	28.43	28.42	27.28	25.65	24.05	25.01	24.12	22.02	21.41	
	810	28.99	29.08	27.89	25.98	24.02	25.22	24.47	22.36	21.64	

	Calculated Maximum Frame-Averaged Output Power												
		Voice			DGE Data NSK)		EDGE Data (8-PSK)						
Band	Channel	[dBm]		GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot				
	128	22.61	22.58	25.01	25.10	24.26	17.08	18.66	18.25	18.44			
GSM 850	190	22.72	22.69	25.21	25.15	24.37	17.33	18.62	18.21	18.49			
	251	22.71	22.75	24.85	25.17	23.60	17.28	18.39	17.96	18.20			
	512	20.16	20.25	21.75	21.48	20.66	16.41	18.41	18.18	18.64			
GSM 1900	661	19.23	19.22	21.09	21.22	20.87	15.81	17.93	17.59	18.23			
	810	19.79	19.88	19.88 21.70 21.55			16.02	18.28	17.93	18.46			
GSM 850	Frame	22.80	22.80	25.31	25.07	24.32	17.80	18.81	18.57	18.82			
GSM 1900	Avg.Targets:	19.80	19.80	21.81	22.07	21.32	16.80	17.81	17.57	17.82			

FCC ID: A3LSMS901E	PCTEST* Proud to be post of @ sistement	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 32 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Page 32 01 107

© 2021 PCTEST. REV 21.4 M

Table 9-2
Reduced Conducted Power - Grip sensor Active, Hotspot Mode Active, and/or Earjack Active

		N	laximum B	urst-Aver	aged Out	put Power				
		Voice		GPRS/EL (GN	OGE Data NSK)			EDGE (8-F	E Data PSK)	
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot	GPRS [dBm] 2 Tx Slot	GPRS [dBm] 3 Tx Slot	GPRS [dBm] 4 Tx Slot	EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot
	512	28.74	28.79	26.39	24.96	22.40	25.61	24.60	22.61	21.82
GSM 1900	661	28.71	28.76	26.89	25.31	21.84	25.01	24.12	22.02	21.41
	810	28.60	28.54	25.80	25.29	22.54	25.22	24.47	22.36	21.64

	Calculated Maximum Frame-Averaged Output Power											
		Voice		GPRS/EDGE Data (GMSK)					E Data PSK)			
Band	Channel	GSM [dBm] CS (1 Slot)	GPRS [dBm] 1 Tx Slot				EDGE [dBm] 1 Tx Slot	EDGE [dBm] 2 Tx Slot	EDGE [dBm] 3 Tx Slot	EDGE [dBm] 4 Tx Slot		
	512	19.54	19.59	20.20	20.53	19.22	16.41	18.41	18.18	18.64		
GSM 1900	661	19.51	19.56	20.70	20.88	18.66	15.81	17.93	17.59	18.23		
	810	19.40	19.34	19.61	20.86	19.36	16.02	18.28	17.93	18.46		
GSM 1900	Frame Avg.Targets:	18.80	18.80	19.81	20.07	18.82	16.80	17.81	17.57	17.82		

Note:

- Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was
 calculated from the measured burst-averaged power by converting the slot powers into linear units and
 calculating the energy over 8 timeslots.
- 2. GPRS/EDGE (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
- 3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8-PSK modulation do not have an impact on output power.

GSM Class: B
GPRS Multislot class: 33 (Max 4 Tx uplink slots)
EDGE Multislot class: 33 (Max 4 Tx uplink slots)
DTM Multislot Class: N/A



Figure 9-1
Power Measurement Setup

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 22 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 33 of 107

9.2 UMTS Conducted Powers

Table 9-3
Maximum Conducted Power

3GPP Release	Mode	3GPP 34.121 Subtest	Cellu	lar Band [dBm]	AW	S Band [d	Bm]	PCS	Band [di	Bm]	3GPP MPR
Version		Oubtest	4132	4183	4233	1312	1412	1513	9262	9400	9538	[ab]
99	WCDMA	12.2 kbps RMC	24.00	24.13	24.10	23.30	23.38	23.42	23.70	23.07	23.31	-
99	VVCDIVIA	12.2 kbps AMR	24.16	24.16	24.18	23.31	23.30	23.34	23.55	23.02	23.27	-
6		Subtest 1	23.05	23.11	23.06	22.35	22.41	22.38	22.44	22.02	22.16	0
6	HSDPA	Subtest 2	23.13	23.16	23.12	22.38	22.39	22.41	22.46	22.03	22.14	0
6	TIODEA	Subtest 3	22.56	22.66	22.61	21.83	21.89	21.91	21.95	21.51	21.65	0.5
6		Subtest 4	22.62	22.65	22.62	21.87	21.91	21.90	21.97	21.52	21.65	0.5
6		Subtest 1	23.07	23.11	23.08	22.32	22.36	22.35	22.42	22.09	22.12	0
6		Subtest 2	21.07	21.13	21.08	20.30	20.35	20.34	20.41	20.01	20.12	2
6	HSUPA	Subtest 3	22.04	22.12	22.07	21.30	21.35	21.34	21.41	21.03	21.11	1
6		Subtest 4	21.06	21.11	21.07	20.31	20.36	20.34	20.42	20.02	20.13	2
6		Subtest 5	23.08	23.12	23.08	22.33	22.36	22.36	22.43	22.03	22.13	0
8		Subtest 1	23.02	23.16	23.13	22.24	22.28	22.31	22.44	22.38	22.41	0
8	DC-HSDPA	Subtest 2	23.04	23.15	23.21	22.21	22.27	22.42	22.43	22.42	22.40	0
8		Subtest 3	22.53	22.68	22.75	21.71	21.73	22.02	21.96	21.85	21.98	0.5
8		Subtest 4	22.57	22.68	22.74	21.68	21.77	22.04	21.91	21.86	22.01	0.5

Table 9-4
Reduced Conducted Power - Grip sensor Active, Hotspot Mode Active, and/or Earjack Active

3GPP Release	Mode	3GPP 34.121 Subtest		S Band [d		PCS	3GPP MPR [dB]		
Version		Sublest	1312	1412	1513	9262	9400	9538	[ub]
99	WCDM	12.2 kbps RMC	19.27	19.34	19.39	19.55	19.03	19.31	-
99	WCDMA	12.2 kbps AMR	19.31	19.40	19.44	19.54	19.02	19.29	-
6		Subtest 1	18.30	18.35	18.35	18.41	18.04	18.14	0
6	HSDPA	Subtest 2	18.32	18.34	18.34	18.41	18.06	18.11	0
6	TIODEA	Subtest 3	17.80	17.85	17.81	17.90	17.51	17.61	0.5
6		Subtest 4	17.79	17.84	17.82	17.93	17.53	17.61	0.5
6		Subtest 1	18.30	18.32	18.32	18.38	18.01	18.10	0
6		Subtest 2	16.28	16.33	16.32	16.40	16.04	16.10	2
6	HSUPA	Subtest 3	17.29	17.31	17.32	17.38	17.01	17.08	1
6		Subtest 4	16.29	16.32	16.32	16.38	16.05	16.11	2
6		Subtest 5	18.29	18.34	18.33	18.37	18.01	18.09	0
8		Subtest 1	18.25	18.25	18.49	18.45	18.37	18.42	0
8	DC-HSDPA	Subtest 2	18.18	18.27	18.48	18.46	18.38	18.47	0
8	DO-HODPA	Subtest 3	17.72	17.72	17.99	17.94	17.85	17.98	0.5
8		Subtest 4	17.68	17.75	18.05	17.93	17.86	18.00	0.5

DC-HSDPA considerations

• 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance

FCC ID: A3LSMS901E	Poud to be port of selement	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
Document S/N:	Test Dates:	DUT Type:		Page 34 of 107	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset			

- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements
- The DUT supports UE category 24 for HSDPA

It is expected by the manufacturer that MPR for some HSPA subtests may be up to 2 dB more than specified by 3GPP, but also as low as 0 dB according to the chipset implementation in this model.



Figure 9-2
Power Measurement Setup

9.3 LTE Conducted Powers

Note: Per FCC KDB Publication 941225 D05v02r05, LTE SAR for the lower bandwidths was not required for testing since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg. Lower bandwidth conducted powers for all LTE bands can be found in Appendix H.

Note: Some LTE bands do not support three non-overlapping channels. Per KDB Publication 941225 D05v02, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
Document S/N:	Test Dates:	DUT Type:		Page 35 of 107	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset			

9.3.1 LTE Band 12

Table 9-5 LTE Band 12 Maximum Conducted Power - 10 MHz Bandwidth

LTE Band 12 Maximum Conducted Fower - 10 Minz Bandwidth LTE Band 12						
10 MHz Bandwidth						
	RB Size	RB Offset	Mid Channel			
			23095	MDD Allersed area	MPR [dB]	
Modulation			(707.5 MHz)	MPR Allowed per 3GPP [dB]		
			Conducted Power	յցբե լն <u>ե</u> յ		
			[dBm]			
	1	0	24.38		0	
	1	25	24.29	0	0	
	1	49	24.32		0	
QPSK	25	0	23.23		1	
	25	12	23.33	0.4	1	
	25	25	23.34	0-1	1	
	50	0	23.24		1	
	1	0	23.49		1	
	1	25	23.48	0-1	1	
	1	49	23.41		1	
16QAM	25	0	22.27		2	
	25	12	22.39	0-2	2	
	25	25	22.36		2	
	50	0	22.28		2	
	1	0	22.49		2	
	1	25	22.47	0-2	2	
	1	49	22.45		2	
64QAM	25	0	21.27		3	
	25	12	21.34	0-3	3	
	25	25	21.35	0-3	3	
	50	0	21.26		3	
	1	0	19.31		5	
	1	25	19.40		5	
	1	49	19.33		5	
256QAM	25	0	19.27	0-5	5	
	25	12	19.36		5	
	25	25	19.36		5	
	50	0	19.28		5	

	FCC ID: A3LSMS901E	PCTEST*	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
	Document S/N:	Test Dates:	DUT Type:		D 00 (407	
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 36 of 107	
© 202	© 2021 PCTEST.					

LTE Band 13 9.3.2

Table 9-6 LTE Band 13 Maximum Conducted Power - 10 MHz Bandwidth

LTE Band 13 Maximum Conducted Power - 10 MHz Bandwidth LTE Band 13								
10 MHz Bandwidth								
			Mid Channel					
Modulation	RB Size	RB Offset	23230 (782.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]			
			Conducted Power [dBm]	00.1 [u2]				
	1	0	24.37		0			
	1	25	24.42	0	0			
	1	49	24.30		0			
QPSK	25	0	23.29		1			
	25	12	23.40	0-1	1			
	25	25	23.37	0-1	1			
	50	0	23.34		1			
	1	0	23.41		1			
	1	25	23.33	0-1	1			
	1	49	23.39		1			
16QAM	25	0	22.30		2			
	25	12	22.39	0-2	2			
	25	25	22.41	0-2	2			
	50	0	22.31		2			
	1	0	22.47		2			
	1	25	22.49	0-2	2			
	1	49	22.41		2			
64QAM	25	0	21.39		3			
	25	12	21.40	0-3	3			
	25	25	21.41	0-3	3			
	50	0	21.35		3			
	1	0	19.11		5			
	1	25	19.41		5			
	1	49	19.35		5			
256QAM	25	0	19.21	0-5	5			
	25	12	19.37		5			
	25	25	19.35		5			
	50	0	19.33		5			

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 37 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 37 01 107

9.3.3 LTE Band 26

Table 9-7 LTE Band 26 (Cell) Maximum Conducted Power - 15 MHz Bandwidth

LTE Band 26 (Cell) Maximum Conducted Power - 13 Minz Bandwidth									
	15 MHz Bandwidth								
			Mid Channel						
			26865	MDD Allowed nor					
Modulation	RB Size	RB Offset	(831.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]				
			Conducted Power	JOFF [UD]					
			[dBm]						
	1	0	23.34		0				
	1	36	23.75	0	0				
	1	74	23.13		0				
QPSK	36	0	22.76		1				
	36	18	22.06	0.4	1				
	36	37	22.07	0-1	1				
	75	0	22.00		1				
	1	0	22.25		1				
	1	36	22.30	0-1	1				
	1	74	22.31		1				
16QAM	36	0	20.87		2				
	36	18	21.05		2				
	36	37	21.11		2				
	75	0	21.00		2				
	1	0	21.29		2				
	1	36	21.37	0-2	2				
	1	74	21.37		2				
64QAM	36	0	19.87		3				
	36	18	20.04		3				
	36	37	20.08	0-3	3				
	75	0	20.40		3				
	1	0	17.77		5				
	1	36	18.13		5				
	1	74	18.02		5				
256QAM	36	0	17.92	0-5	5				
ļ	36	18	18.05		5				
ļ	36	37	18.12		5				
	75	0	17.99		5				

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dama 20 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 38 of 107

9.3.4 LTE Band 66

Table 9-8 LTE Band 66 (AWS) Maximum Conducted Power - 20 MHz Bandwidth

	LTE Band 66 (AWS) MAXIMUM Conducted Power - 20 Minz Bandwidth LTE Band 66 (AWS)								
		I	Low Channel	20 MHz Bandwidth Mid Channel	High Channal	1			
Modulation	RB Size	RB Offset	132072 (1720.0 MHz)	132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]		
				Conducted Power [dBm]				
L	1	0	22.70	23.15	23.80		0		
L	1	50	22.91	23.75	23.75	0	0		
	1	99	22.82	23.38	23.69		0		
QPSK	50	0	22.51	22.48	22.63		1		
	50	25	22.49	22.59	22.74	0-1	1		
	50	50	22.48	22.54	22.72		1		
	100	0	22.08	22.48	22.60		1		
	1	0	22.13	21.97	22.50		1		
	1	50	22.64	22.64	22.33	0-1	1		
	1	99	21.94	22.05	22.54		1		
16QAM	50	0	20.92	20.97	21.60		2		
	50	25	21.13	21.32	21.62	0-2	2		
	50	50	21.29	21.45	21.69	0-2	2		
	100	0	20.93	21.21	21.15		2		
	1	0	20.76	20.91	21.40		2		
	1	50	21.16	21.27	21.33	0-2	2		
	1	99	20.98	20.94	21.49		2		
64QAM	50	0	20.36	20.29	20.61		3		
	50	25	20.54	20.74	20.57	0-3	3		
	50	50	20.55	20.74	20.79	0-3	3		
	100	0	20.52	20.51	20.57		3		
	1	0	18.36	18.41	18.37		5		
Ī	1	50	18.55	18.75	18.43		5		
Ī	1	99	18.26	18.28	18.34		5		
256QAM	50	0	18.14	18.19	18.21	0-5	5		
ľ	50	25	18.18	18.24	18.28	1	5		
Ī	50	50	18.05	18.08	18.15	1	5		
	100	0	18.10	18.14	18.13	1	5		

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 39 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 39 01 107

Table 9-9
LTE Band 66 (AWS) Reduced Conducted Power - Grip sensor Active, Hotspot Mode Active, and/or
Earjack Active - 20 MHz Bandwidth

	LTE Band 66 (AWS) 20 MHz Bandwidth								
			Low Channel	Mid Channel	Mid Channel High Channel				
Modulation	RB Size	RB Offset	132072 (1720.0 MHz)	132322 (1745.0 MHz)	132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]		
				Conducted Power [dBm					
	1	0	18.51	18.39	18.42		0		
	1	50	19.00	18.74	18.46	0	0		
	1	99	18.48	18.37	18.25		0		
QPSK	50	0	18.65	18.71	18.45		0		
	50	25	19.02	18.72	18.53	0-1	0		
	50	50	18.67	18.60	18.30	0-1	0		
	100	0	18.77	18.61	18.41		0		
	1	0	18.64	18.48	18.58		0		
	1	50	19.02	18.89	18.66	0-1	0		
	1	99	18.61	18.46	18.42		0		
16QAM	50	0	18.76	18.59	18.33		0		
	50	25	18.83	18.58	18.43		0		
	50	50	18.59	18.46	18.22	0-2	0		
	100	0	18.67	18.48	18.30		0		
	1	0	18.79	18.57	18.67		0		
	1	50	19.09	18.95	18.71	0-2	0		
	1	99	18.88	18.49	18.54		0		
64QAM	50	0	18.82	18.62	18.35		0		
	50	25	18.91	18.61	18.43	0-3	0		
	50	50	18.69	18.48	18.20	0-3	0		
	100	0	18.77	18.50	18.32		0		
	1	0	18.75	18.39	18.21		0.5		
	1	50	18.66	18.36	18.25		0.5		
	1	99	18.76	18.40	18.23		0.5		
256QAM	50	0	18.73	18.43	18.22	0-5	0.5		
	50	25	18.70	18.44	18.24		0.5		
	50	50	18.72	18.46	18.20		0.5		
	100	0	18.75	18.39	18.25		0.5		

FCC ID: A3LSMS901E	Poud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dame 40 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 40 of 107

9.3.1 LTE Band 4 Antenna F

Table 9-10
LTE Band 4 (AWS) Antenna F Maximum Conducted Power - 20 MHz Bandwidth

LTE Band 4 (AWS) Antenna F Maximum Conducted Power - 20 MHz Bandwidth LTE Band 4 (AWS)								
20 MHz Bandwidth								
			Mid Channel					
Modulation	RB Size	RB Offset	20175 (1732.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]			
			Conducted Power [dBm]	5533 [32]				
	1	0	20.13		0			
	1	50	20.50	0	0			
	1	99	20.38		0			
QPSK	50	0	19.24		1			
	50	25	19.45	0-1	1			
	50	50	19.41	0-1	1			
	100	0	19.32		1			
	1	0	19.22		1			
	1	50	19.48	0-1	1			
	1	99	19.42		1			
16QAM	50	0	18.27		2			
	50	25	18.39	0-2	2			
	50	50	18.40	0-2	2			
	100	0	18.22		2			
	1	0	18.16		2			
	1	50	18.51	0-2	2			
	1	99	18.40		2			
64QAM	50	0	17.18		3			
	50	25	17.34	0.0	3			
	50	50	17.44	0-3	3			
	100	0	17.20		3			
	1	0	15.14		5			
	1	50	15.46		5			
	1	99	15.23		5			
256QAM	50	0	15.21	0-5	5			
	50	25	15.32		5			
	50	50	15.35	1	5			
	100	0	15.24		5			

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 41 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 41 of 107

Table 9-11 LTE Band 4 (AWS) Antenna F Reduced Conducted Power – Head and/or Hotspot Mode Active - 20 MHz

Bandwidth

	LTE Band 4 (AWS) 20 MHz Bandwidth								
			Mid Channel						
Modulation	RB Size	RB Offset	20175 (1732.5 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]				
			Conducted Power [dBm]	2.5					
	1	0	16.13		0				
	1	50	16.33	0	0				
	1	99	16.17		0				
QPSK	50	0	16.16		0				
	50	25	16.30	0-1	0				
	50	50	16.32	0-1	0				
	100	0	16.27		0				
	1	0	16.15		0				
	1	50	16.39	0-1	0				
	1	99	16.10		0				
16QAM	50	0	16.22		0				
	50	25	16.30	0-2	0				
	50	50	16.26	0-2	0				
	100	0	16.25		0				
	1	0	16.12		0				
	1	50	16.39	0-2	0				
	1	99	16.18		0				
64QAM	50	0	16.14		0				
	50	25	16.22	0-3	0				
	50	50	16.32	0-3	0				
	100	0	16.16		0				
	1	0	16.10		0				
	1	50	16.21		0				
	1	99	16.16		0				
256QAM	50	0	16.11	0-5	0				
	50	25	16.34		0				
	50	50	16.25		0				
	100	0	16.19		0				

FCC	C ID: A3LSMS901E	PCTEST* Proud to be part of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Doc	cument S/N:	Test Dates:	DUT Type:		Dage 42 of 407
1M2	2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 42 of 107

LTE Band 25 9.3.2

Table 9-12 LTF Band 25 (PCS) Maximum Conducted Power - 20 MHz Bandwidth

		LIE Band	25 (PCS) Waxii	num Conducted LTE Band 25 (PCS)	Power - 20 Min	z bandwidth	
				20 MHz Bandwidth			
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
				Conducted Power [dBm			
	1	0	23.50	22.98	22.78		0
	1	50	23.40	22.86	22.77	0	0
	1	99	23.18	22.80	22.73	1	0
QPSK	50	0	22.39	21.89	21.82		1
	50	25	22.38	21.86	21.81	0-1	1
	50	50	22.22	21.95	21.88	0-1	1
	100	0	22.38	21.85	21.69	1	1
	1	0	22.41	21.92	21.68		1
	1	50	22.31	21.89	21.63	0-1	1
16QAM	1	99	22.22	21.69	21.68	1	1
	50	0	21.42	21.17	20.96		2
	50	25	21.15	21.47	20.90	0-2	2
	50	50	21.03	21.37	20.83	0-2	2
	100	0	21.10	20.76	20.78		2
	1	0	21.36	20.86	20.59		2
	1	50	21.24	20.88	20.55	0-2	2
	1	99	21.20	20.60	20.62	1	2
64QAM	50	0	20.37	20.06	19.93		3
	50	25	20.09	20.41	19.85	0-3	3
	50	50	20.00	20.32	19.79	0-3	3
	100	0	20.06	19.87	20.00		3
•	1	0	18.21	17.98	17.62		5
	1	50	18.03	17.85	17.51]	5
	1	99	18.14	17.87	17.64] [5
256QAM	50	0	18.27	17.84	17.87	0-5	5
	50	25	17.97	18.29	17.75	1	5
	50	50	17.94	18.22	17.71] [5
	100	0	17.98	17.89	17.54]	5

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
Document S/N:	Test Dates:	DUT Type:		Page 43 of 107	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 43 01 107	

Table 9-13
LTE Band 25 (PCS) Reduced Conducted Power - Grip sensor Active, Hotspot Mode Active, and/or Earjack
Active - 20 MHz Bandwidth

			71011	/e - 20 MHz Band LTE Band 25 (PCS)	awiaiii		
				20 MHz Bandwidth			
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz) Conducted Power [dBm	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
	1	0	18.87	18.49	18.25		0
	1	50	18.91	18.41	18.35	0	0
	1	99	18.72	18.35	18.23	1	0
QPSK	50	0	18.84	18.41	18.25		0
	50	25	18.87	18.42	18.27	0.4	0
	50	50	18.71	18.36	18.31	0-1	0
	100	0	18.74	18.29	18.19		0
	1	0	18.90	18.65	18.48		0
	1	50	18.92	18.56	18.57	0-1	0
	1	99	18.78	18.57	18.44		0
16QAM	QAM 50	0	18.73	18.42	18.22		0
	50	25	18.76	18.41	18.25	0-2	0
	50	50	18.54	18.33	18.27	0-2	0
	100	0	18.60	18.25	18.10		0
	1	0	19.00	18.68	18.08		0
	1	50	18.89	18.57	18.19	0-2	0
	1	99	18.74	18.41	18.09		0
64QAM	50	0	18.75	18.38	18.22		0
	50	25	18.75	18.37	18.24	0-3	0
	50	50	18.57	18.27	18.30		0
	100	0	18.63	18.26	18.13		0
	1	0	17.95	17.45	17.46]	0.5
	1	50	18.15	17.60	17.75	_	0.5
	1	99	17.71	17.48	17.44		0.5
256QAM	50	0	17.75	17.46	17.39	0-5	0.5
	50	25	17.90	17.49	17.38]	0.5
	50	50	17.72	17.44	17.35		0.5
	100	0	17.78	17.39	17.36		0.5

FCC ID: A3LSMS901E	Poud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 44 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 44 of 107

LTE Band 41 9.3.3

Table 9-14 LTE Band 41 PC3 Maximum Conducted Power - 20 MHz Bandwidth

		LILL	Dallu 41 FC) Waxiiiiuiii	LTE Band 41	Power - 20 i	VIIIZ Dalluw	idui	
				20	0 MHz Bandwidth				
			Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel		
Modulation	RB Size	RB Offset	39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
				Co	nducted Power [dB	Bm]			
	1	0	24.63	24.72	24.30	23.86	23.49		0
	1	50	24.70	24.70	24.46	24.15	23.98	0	0
	1	99	24.69	24.68	24.06	23.64	23.88	1	0
QPSK	50	0	23.64	23.55	23.37	23.11	22.84		1
	50	25	23.65	23.64	23.48	23.13	22.94	0-1	1
	50	50	23.66	23.67	23.38	22.89	22.90] "' [1
100	100	0	23.62	23.58	23.37	22.95	22.81		1
	1	0	22.99	23.10	22.60	22.58	22.32		1
	1	50	23.21	23.06	23.01	22.97	23.02	0-1	1
16QAM	1	99	23.05	23.11	22.69	22.42	22.79		1
	50	0	21.84	21.88	21.78	21.57	21.57		2
	50	25	21.94	22.01	21.89	21.65	21.87	0-2	2
	50	50	22.01	22.01	21.82	21.60	21.89		2
	100	0	21.80	21.85	21.75	21.54	21.67		2
	1	0	21.74	21.86	21.51	21.21	21.30		2
	1	50	22.03	22.02	21.93	21.79	21.99	0-2	2
	1	99	21.98	21.91	21.67	21.32	21.80	1	2
64QAM	50	0	20.79	20.87	20.78	20.57	20.53		3
	50	25	20.92	21.03	20.91	20.66	20.87	1 ,,	3
	50	50	20.90	21.13	20.88	20.59	20.89	0-3	3
	100	0	20.82	20.81	20.76	20.53	20.68	1	3
	1	0	19.01	19.22	19.33	18.73	18.27		5
	1	50	19.39	19.27	19.21	19.07	18.71	7	5
	1	99	19.31	19.07	19.22	18.50	18.40	1	5
256QAM	50	0	19.10	19.25	19.26	18.87	18.50	0-5	5
	50	25	19.36	19.25	19.43	19.06	18.70	 	5
	50	50	19.36	19.12	19.25	18.73	18.66	1	5
	100	0	19.37	19.31	19.27	18.82	18.60	†	5

FCC ID: A3LSMS901E	Poud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 45 of 407
1M2109290114-01.A3L (Rev2)	0114-01.A3L (Rev2) 10/08/21 – 12/14/21 Portable Handset			Page 45 of 107

Table 9-15 LTE Band 41 PC3 Reduced Conducted Power - Grip sensor Active, Hotspot Mode Active, and/or Earjack
Active - 20 MHz Bandwidth

				ACTIVE 2	LTE Band 41	awiani			
				2	0 MHz Bandwidth	1		1	
			Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel		
Modulation	RB Size	RB Offset	39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
				Co	nducted Power [dB	lm]			
	1	0	22.68	22.73	22.25	22.06	21.51		0
	1	50	22.78	22.83	22.73	22.31	22.18	0	0
	1	99	22.66	22.75	22.29	21.80	21.85		0
QPSK	50	0	22.62	22.66	22.53	22.28	21.89		0
	50	25	22.75	22.81	22.70	22.32	22.06	0-1	0
	50	50	22.69	22.73	22.53	22.13	21.96] 0-1	0
	100	0	22.65	22.66	22.56	22.21	21.98		0
	1	0	22.65	22.69	22.34	21.99	21.77		0
	1	50	22.83	22.89	22.84	22.33	22.25	0-1	0
	1	99	22.77	22.67	22.48	21.78	21.91		0
16QAM	50	0	22.61	22.65	22.57	22.26	21.84		0
	50	25	22.72	22.80	22.72	22.36	22.09	0-2	0
	50	50	22.71	22.72	22.51	22.05	21.99		0
	100	0	22.63	22.64	22.61	22.11	21.98		0
	1	0	22.65	22.78	22.38	22.13	21.71		0
	1	50	22.79	22.91	22.72	22.34	22.28	0-2	0
	1	99	22.71	22.78	22.41	21.86	22.06		0
64QAM	50	0	21.62	21.64	21.51	21.25	20.90		1
	50	25	21.70	21.81	21.74	21.37	20.99	1 ,,	1
	50	50	21.70	21.73	21.52	21.11	21.08	0-3	1
	100	0	21.61	21.62	21.56	21.23	21.01		1
	1	0	19.19	19.31	19.52	19.09	18.68		3
	1	50	19.82	19.85	19.64	19.43	19.02] [3
	1	99	19.53	19.43	19.19	18.71	18.91	1	3
256QAM	50	0	19.47	19.56	19.53	19.24	18.85	0-5	3
	50	25	19.71	19.77	19.69	19.35	19.01	-	3
	50	50	19.66	19.61	19.49	19.05	18.97	1	3
	100	0	19.62	19.61	19.54	19.19	18.96	1	3

Table 9-16 LTE Band 41 PC2 Maximum Conducted Power - 20 MHz Bandwidth

	ETE Band 411 OF Maximum Conducted Fower 20 Mile Bandwidth											
					LTE Band 41							
				2	0 MHz Bandwidth							
			Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel					
Modulation	RB Size	RB Offset	39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]			
				Co	nducted Power [dB	im]						
	1	0	26.12	26.31	25.66	25.57	25.11		0			
	1	50	26.31	26.40	26.11	25.91	25.64	0	0			
	1	99	26.25	26.33	25.72	25.35	25.49		0			
QPSK	50	0	25.19	25.25	25.04	24.81	24.41		1			
	50	25	25.32	25.33	25.21	24.87	24.62	0-1	1			
	50	50	25.29	25.33	25.07	24.63	24.55] 0-1	1			
	100	0	25.23	25.18	25.10	24.71	24.46		1			

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 46 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 46 of 107

REV 21.4 M

Table 9-17 LTE Band 41 PC2 Reduced Conducted Power - Grip sensor Active, Hotspot Mode Active, and/or Earjack
Active - 20 MHz Bandwidth

	LTE Band 41 20 MHz Bandwidth											
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per	MPR [dB]			
		112 011001	IND ORISET	(2506.0 MHz)	(2549.5 MHz)	(2593.0 MHz)	(2636.5 MHz)	(2680.0 MHz)	3GPP [dB]			
				Co	nducted Power [dB	m]						
	1	0	21.84	22.10	21.66	21.49	21.30		0			
	1	50	22.05	22.40	22.14	21.87	21.88	0	0			
	1	99	22.02	22.14	21.75	21.41	21.79		0			
QPSK	50	0	21.95	22.13	21.90	21.61	21.62		0			
	50	25	22.05	22.27	21.98	21.70	21.91	0-1	0			
	50	50	22.06	22.19	21.91	21.61	21.93	J 0-1	0			
	100	0	21.95	21.99	21.86	21.56	21.74		0			



Figure 9-1 **Power Measurement Setup**

FCC ID: A3LSMS901E	PCTEST* Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dage 47 of 407
1M2109290114-01.A3L (Rev2)	0114-01.A3L (Rev2) 10/08/21 – 12/14/21 Portable Handset			Page 47 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		PEV 24 4

9.4 **NR Conducted Powers**

Per October 2020 TCB Workshop Guidance, NR FR1 SAR evaluations are being generally based on adapting the existing LTE SAR procedures (FCC KDB Publication 941225 D05v02r05). Therefore, NR SAR for the lower bandwidths was not required for testing based on the measured output power and the reported NR SAR for the highest bandwidth. Lower bandwidth conducted powers for all NR bands can be found in appendix H.

Note: Some NR bands do not support non-overlapping channels. Per FCC Guidance, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

9.4.1 NR Band n5

Table 9-18 NR Band n5 Maximum Conducted Power - 20 MHz Bandwidth

		NR Band			
		20 MHz Ban			
			Channel		
Modulation	RB Size	RB Offset	167300 (836.5 MHz)	MPR Allowed per 3GPP	MPR [dB]
			Conducted Power [dBm]	[dB]	
	1	1	23.31		0.0
	1	53	23.35	0	0.0
DFT-s-OFDM	1	104	23.35		0.0
π/2 BPSK	50	0	23.17	0-0.5	0.5
M/2 DI SIX	50	28	23.31	0	0.0
	50	56	23.23	0-0.5	0.5
	100	0	23.27	0-0.5	0.5
	1	1	23.30		0.0
	1	53	23.55	0	0.0
DFT-s-OFDM	1	104	23.33		0.0
QPSK	50	0	23.00	0-1	1.0
Qi Sit	50	28	23.50	0	0.0
	50	56	22.90	0-1	1.0
	100	0	23.00	0-1	1.0
DFT-s-OFDM 16QAM	1	1	23.00	0-1	1.0
CP-OFDM QPSK	1	1	22.48	0-1.5	1.5

	FCC ID: A3LSMS901E	Post to be post of light element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		Dogg 48 of 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 48 of 107
© 202	1 PCTEST.		•		REV 21.4 M

9.4.2 NR Band n66 Antenna A

Table 9-19 NR Band n66 Antenna A Maximum Conducted Power - 20 MHz Bandwidth

	NR Band n66 20 MHz Bandwidth									
				Channel						
Modulation	RB Size	RB Size RB Offset	344000 (1720 MHz)	349000 (1745 MHz)	354000 (1770 MHz)	MPR Allowed per 3GPP	MPR [dB]			
			Conducted Power [dBm]			[dB]				
	1	1	23.19	23.72	23.86		0.0			
	1	53	23.53	23.85	23.92	0	0.0			
DFT-s-OFDM	1	104	23.79	23.95	24.13		0.0			
π/2 BPSK	50	0	22.93	23.41	23.46	0-0.5	0.5			
W/Z DI SK	50	28	23.61	23.93	24.02	0	0.0			
	50	56	23.19	23.59	23.50	0-0.5	0.5			
	100	0	23.05	23.49	23.51		0.5			
	1	1	23.45	23.91	23.93		0.0			
	1	53	23.52	24.00	23.87	0	0.0			
DFT-s-OFDM	1	104	23.79	24.11	24.15		0.0			
QPSK	50	0	22.51	22.92	22.83	0-1	1.0			
QF ON	50	28	23.67	24.01	24.03	0	0.0			
	50	56	22.72	23.01	23.00	0-1	1.0			
	100	0	22.58	22.90	23.01	0-1	1.0			
DFT-s-OFDM 16QAM	1	1	22.48	22.77	22.81	0-1	1.0			
CP-OFDM QPSK	1	1	21.80	22.15	22.45	0-1.5	1.5			

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 49 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 49 01 107

Table 9-20
NR Band n66 Antenna A Reduced Conducted Power - Grip sensor Active, Hotspot Mode Active, and/or Earjack Active - 20 MHz Bandwidth

	NR Band n66 20 MHz Bandwidth									
			Channel							
Modulation	RB Size RI	RB Size RB Offset _	344000 (1720 MHz)	349000 (1745 MHz)	354000 (1770 MHz)	MPR Allowed per 3GPP	MPR [dB]			
			Cor	nducted Power [d	Bm]	[dB]	,			
	1	1	19.85	20.05	20.02		0.0			
	1	53	19.89	20.06	20.06	0	0.0			
DFT-s-OFDM	1	104	19.93	20.15	20.33		0.0			
π/2 BPSK	50	0	19.75	20.21	20.35	0-0.5	0.0			
R/2 DI SK	50	28	19.91	20.18	20.30	0	0.0			
	50	56	19.96	20.24	20.33	0-0.5	0.0			
	100	0	19.87	20.23	20.39		0.0			
	1	1	19.89	20.10	20.42		0.0			
	1	53	19.95	20.22	20.36	0	0.0			
DFT-s-OFDM	1	104	20.11	20.29	20.53		0.0			
QPSK	50	0	19.77	19.96	19.98	0-1	0.0			
Qi Oit	50	28	19.99	20.26	20.45	0	0.0			
	50	56	19.80	19.99	19.99	0-1	0.0			
	100	0	19.81	19.95	19.97	0-1	0.0			
DFT-s-OFDM 16QAM	1	1	19.76	20.08	19.82	0-1	0.0			
CP-OFDM QPSK	1	1	19.87	19.94	20.19	0-1.5	0.0			

FCC ID: A3LSMS901E	Proud to be post of element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 50 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 50 of 107

9.4.3 NR Band n66 Antenna F

Table 9-21 NR Band n66 Antenna F Maximum Conducted Power - 20 MHz Bandwidth

			NR Band				
				Channel			
Modulation	RB Size R	RB Size RB Offset _	344000 (1720 MHz)	349000 (1745 MHz)	354000 (1770 MHz)	MPR Allowed per 3GPP	MPR [dB]
			Cor	nducted Power [d	Bm]	[dB]	
	1	1	21.81	21.51	21.62		0.0
	1	53	21.83	21.72	21.72	0	0.0
DFT-s-OFDM	1	104	21.81	21.79	21.62		0.0
π/2 BPSK	50	0	21.53	21.81	21.53	0-0.5	0.5
WZ DI SK	50	28	21.89	21.90	21.63	0	0.0
	50	56	21.69	21.95	21.65	0-0.5	0.5
	100	0	21.64	21.96	21.71	0-0.5	0.5
	1	1	21.90	21.49	21.69		0.0
	1	53	21.78	21.49	21.75	0	0.0
DFT-s-OFDM	1	104	21.89	21.51	21.80		0.0
QPSK	50	0	21.73	21.23	21.57	0-1	1.0
Qi Oit	50	28	21.88	21.50	21.77	0	0.0
	50	56	21.61	21.30	21.54	0-1	1.0
	100	0	21.65	21.31	21.50	0-1	1.0
DFT-s-OFDM 16QAM	1	1	21.42	21.31	21.20	0-1	1.0
CP-OFDM QPSK	1	1	21.20	20.53	20.96	0-1.5	1.5

Table 9-22 NR Band n66 Antenna F Reduced Conducted Power - Head - 20 MHz Bandwidth

THE BUIL	NR Band not Antenna F Reduced Conducted Fower - Head - 20 MHz Bandwidth NR Band n66									
			20 MHz Ban							
	T.	1		Channel	ı	l				
Modulation	RB Size RI	RB Size RB Offset	344000 (1720 MHz)	349000 (1745 MHz)	354000 (1770 MHz)	MPR Allowed per 3GPP	MPR [dB]			
			Conducted Power [dBm]			[dB]				
	1	1	17.94	18.11	18.32		0.0			
	1	53	17.91	18.16	18.40	0	0.0			
DFT-s-OFDM	1	104	18.18	18.23	18.58		0.0			
π/2 BPSK	50	0	18.05	18.09	18.45	0-0.5	0.0			
M2 DI SK	50	28	18.01	18.13	18.49	0	0.0			
	50	56	18.12	18.22	18.51	0-0.5	0.0			
	100	0	18.10	18.17	18.52		0.0			
	1	1	18.19	18.29	18.39		0.0			
	1	53	18.14	18.21	18.53	0	0.0			
DFT-s-OFDM	1	104	18.28	18.26	18.64	7 [0.0			
QPSK	50	0	18.13	18.19	18.43	0-1	0.0			
QF SIX	50	28	18.15	18.20	18.55	0	0.0			
	50	56	18.21	18.26	18.61	0-1	0.0			
	100	0	18.14	18.25	18.52	U-1	0.0			
DFT-s-OFDM 16QAM	1	1	18.16	18.33	18.32	0-1	0.0			
CP-OFDM QPSK	1	1	18.05	18.24	18.59	0-1.5	0.0			

	FCC ID: A3LSMS901E	Pout to be post of element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	es: DUT Type:		Dogg 51 of 107
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 51 of 107
© 202	1 PCTEST.		•		REV 21.4 M

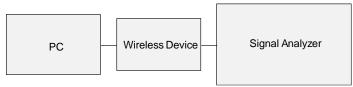


Figure 9-2 **Power Measurement Setup**

WLAN Conducted Powers 9.5

Table 9-23 2.4 GHz WLAN Maximum Average RF Power - Ant 2

2.4 One Weat maximum Average Ri Tower Ant 2								
2.4GHz Conducted Power [dBm]								
		IEEE Transmission Mode						
Freq [MHz]	Channel	Channel 802.11b 802.11g 802.11n 802.						
		Average	Average	Average	Average			
2412	1	18.55	17.47	17.33	17.37			
2437	6	18.54	17.71	17.38	17.44			
2457	10	N/A	N/A	17.25	17.18			
2462	11	18.39	17.53	16.05	15.89			

Table 9-24 2.4 GHz WLAN Maximum Average RF Power - MIMO

2.4GHz 802.11b Conducted Power [dBm]								
Freq [MHz] Channel ANT1 ANT2 MIMO								
2412	1	18.60	18.55	21.59				
2437	6	18.26	18.54	21.41				
2462	11	18.35	18.39	21.38				

Table 9-25

2.4 GHz WLAN Reduced Average RF Power with RCV Active, and/or During Conditions with 2.4 GHz and 5 GHz WLAN, and/or with 5G NR - Ant 2

	2.4GHz Conducted Power [dBm]								
		IEEE Transmission Mode							
Freq [MHz]	Channel	802.11b	802.11g	802.11n	802.11ax				
		Average	Average	Average	Average				
2412	1	14.44	14.47	14.12	14.13				
2437	6	13.89	14.10	14.21	14.53				
2462	11	14.43	14.21	14.11	14.22				

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 52 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Faye 52 01 107

REV 21.4 M

Table 9-26 2.4 GHz WLAN Reduced Average RF Power with RCV Active and/or During Conditions with 2.4 GHz and 5 GHz WLAN, and/or with 5G NR – MIMO

2.4GHz 802.11n Conducted Power [dBm]						
Freq [MHz] Channel ANT1 ANT2 MIMO						
2412	1	14.29	14.12	17.22		
2437	6	14.02	14.21	17.13		
2462	11	13.95	14.11	17.04		

Table 9-27 5 GHz WLAN Maximum Average RF Power - Ant 1

5GHz (80MHz) Conducted Power [dBm]						
	IEEE Transmission Mod					
Freq [MHz]	Channel	802.11ac	802.11ax			
		Average	Average			
5210	42	16.98	16.92			
5290	58	17.73	17.56			
5530	106	17.56	17.64			
5610	122	17.63	17.72			
5690	138	17.86	17.34			
5775	155	17.92	17.58			
5855	171	17.42	17.70			

Table 9-28 5 GHz WLAN Maximum Average RF Power - MIMO

5GHz (80MHz) 802.11ac Conducted Power [dBm]					
Freq [MHz]	Channel	ANT1	ANT2	MIMO	
5210	42	16.98	16.52	19.77	
5290	58	17.73	17.39	20.57	
5530	106	17.56	17.61	20.60	
5610	122	17.63	17.57	20.61	
5690	138	17.86	17.39	20.64	
5775	155	17.92	17.52	20.73	
5855	171	17.42	17.59	20.52	

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 53 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Fage 53 01 107

Table 9-29
5 GHz WLAN Reduced Average RF Power During Conditions with 2.4 GHz and 5 GHz WLAN, and/or with 5G NR – Ant 1

5GHz (80MHz) Conducted Power [dBm]						
		IEEE Transmission Mode				
Freq [MHz]	Channel	802.11ac	802.11ax			
		Average	Average			
5210	42	11.80	12.01			
5290	58	12.01	12.13			
5530	106	11.96	12.13			
5610	122	12.23	12.24			
5690	138	12.19	12.27			
5775	155	12.06	12.34			
5855	171	11.93	12.00			

Table 9-30
5 GHz WLAN Reduced Average RF Power During Conditions with 2.4 GHz and 5 GHz WLAN, and/or with 5G NR – MIMO

5GHz (80MHz) 802.11ac Conducted Power [dBm]						
Freq [MHz]	Channel	ANT1	ANT2	MIMO		
5210	42	11.80	11.76	14.79		
5290	58	12.01	12.07	15.05		
5530	106	11.96	12.18	15.08		
5610	122	12.23	12.34	15.30		
5690	138	12.19	12.27	15.24		
5775	155	12.06	11.87	14.98		
5855	171	11.93	12.02	14.99		

Table 9-31
5 GHz WLAN Reduced Average RF Power During Conditions with RCV Active, or RCV Active During
Conditions with 2.4 GHz WLAN and/or with 5G NR - Ant 1

5GHz (80MHz) Conducted Power [dBm]						
		IEEE Transmission Mode				
Freq [MHz]	Channel	802.11ac	802.11ax			
		Average	Average			
5210	42	9.34	9.27			
5290	58	9.56	9.55			
5530	106	8.90	9.10			
5610	122	8.97	9.12			
5690	138	9.21	9.00			
5775	155	9.43	9.14			
5855	171	9.32	9.22			

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 54 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 54 01 107

Table 9-32
5 GHz WLAN Reduced Average RF Power During Conditions with RCV Active, or RCV Active During
Conditions with 2.4 GHz WLAN and/or with 5G NR - MIMO

5GHz (80MHz) 802.11ac Conducted Power [dBm]						
Freq [MHz]	Channel	ANT1	ANT2	MIMO		
5210	42	9.34	8.60	12.00		
5290	58	9.56	9.37	12.48		
5530	106	8.90	8.47	11.70		
5610	122	8.97	9.20	12.10		
5690	138	9.21	8.90	12.07		
5775	155	9.43	9.23	12.34		
5855	171	9.32	9.18	12.26		

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

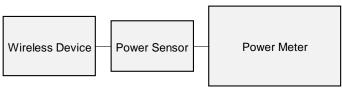


Figure 9-3
Power Measurement Setup

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 55 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 55 of 107

Bluetooth Conducted Powers 9.6

Table 9-33 Bluetooth Maximum Average RF Power

Frequency	Data	Maximum	Channel	Avg Co	Avg Conducted Power	
[MHz]	Rate [Mbps]	Mod.	No.	[dBm]	[mW]	
2402	1.0	GFSK	0	15.56	35.975	
2441	1.0	GFSK	39	15.22	33.266	
2480	1.0	GFSK	78	13.86	24.322	
2402	2.0	π/4-DQPSK	0	11.23	13.274	
2441	2.0	π/4-DQPSK	39	11.07	12.794	
2480	2.0	π/4-DQPSK	78	9.73	9.397	
2402	3.0	8DPSK	0	11.26	13.366	
2441	3.0	8DPSK	39	11.08	12.823	
2480	3.0	8DPSK	78	9.77	9.484	

Table 9-34 Bluetooth Reduced Average RF Power (RCV Active)

Frequency	Frequency Data	Mod.	Channel	Avg Cor Pov	
[MHz]	[Mbps]		No.	[dBm]	[mW]
2402	1.0	GFSK	0	12.34	17.140
2441	1.0	GFSK	39	12.53	17.906
2480	1.0	GFSK	78	12.05	16.032

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 56 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	rage 56 01 107

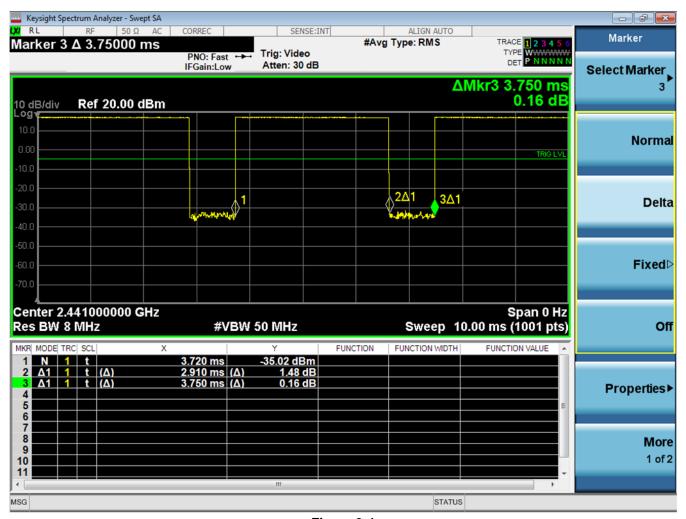


Figure 9-4
Bluetooth Transmission Plot

Equation 9-1 Bluetooth Duty Cycle Calculation

$$Duty \, Cycle = \frac{Pulse \, Width}{Period} * 100\% = \frac{2.91ms}{3.75ms} * 100\% = 77.6\%$$

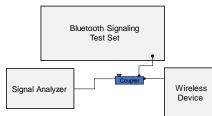


Figure 9-5
Power Measurement Setup

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
Document S/N:	Test Dates:	DUT Type:	Page 57 of 107		
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 57 01 107	

© 2021 PCTEST.

REV 21.4 M
09/11/2019

10.1 Tissue Verification

Table 10-1 Measured Head Tissue Properties

				lead Tiss					
Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
		()	680	0.898	41.621	0.888	42.305	1.13%	-1.62%
			695	0.904	41.583	0.889	42.227	1.69%	-1.53%
			700	0.905	41.566	0.889	42.201	1.80%	-1.50%
			710	0.909	41.535	0.890	42.149	2.13%	-1.46%
10/21/2021	750 Head	21.6	725	0.914	41.484	0.891	42.071	2.58%	-1.40%
		750	0.923	41.399	0.894	41.942	3.24%	-1.29%	
			770	0.929	41.336	0.895	41.838	3.80%	-1.20%
			785	0.934	41.300	0.896	41.760	4.24%	-1.10%
			800	0.940	41.262	0.897	41.682	4.79%	-1.01%
			815	0.936	41.972	0.898	41.594	4.23%	0.91%
10/24/2021	835 Head	22.8	820	0.937	41.962	0.899	41.578	4.23%	0.92%
			835	0.943	41.928	0.900	41.500	4.78%	1.03%
			850	0.949	41.897	0.916	41.500	3.60%	0.96%
			815 820	0.874 0.875	43.447 43.440	0.898	41.594 41.578	-2.67%	4.45% 4.48%
11/10/2021	835 Head	21.3	835	0.875	43.440	0.899	41.578	-2.67% -2.11%	4.48%
			850	0.886	43.414	0.916	41.500	-3.28%	4.54%
			1710	1.344	40.140	1.348	40.142	-0.30%	0.00%
			1720	1.349	40.129	1.354	40.126	-0.37%	0.01%
			1745	1.363	40.090	1.368	40.087	-0.37%	0.01%
10/08/2021	1750 Head	1750 Head 21.5	1750	1.366	40.080	1.371	40.079	-0.36%	0.00%
			1770	1.378	40.050	1.383	40.047	-0.36%	0.01%
			1790	1.391	40.032	1.394	40.016	-0.22%	0.04%
			1710	1.349	39.457	1.348	40.142	0.07%	-1.71%
			1720	1.355	39.449	1.354	40.126	0.07%	-1.69%
11/01/2021	1750 Head	21.0	1745	1.368	39.421	1.368	40.087	0.00%	-1.66%
11/01/2021	1770172021 1730 Nead	O Flead 21.0	1750	1.371	39.414	1.371	40.079	0.00%	-1.66%
			1770	1.383	39.385	1.383	40.047	0.00%	-1.65%
			1790	1.396	39.362	1.394	40.016	0.14%	-1.63%
		1710	1.313	39.663	1.348	40.142	-2.60%	-1.19%	
			1720	1.323	39.629	1.354	40.126	-2.29%	-1.24%
11/29/2021 1750 Hea	1750 Head	20.5	1745 1750	1.347	39.540	1.368	40.087 40.079	-1.54%	-1.36%
			1770	1.352 1.371	39.521 39.444	1.371	40.079	-1.39% -0.87%	-1.39% -1.51%
			1770	1.391	39.363	1.394	40.047	-0.22%	-1.63%
			1850	1.428	39.306	1.400	40.000	2.00%	-1.74%
		lead 21.1	1860	1.434	39.286	1.400	40.000	2.43%	-1.79%
			1880	1.446	39.260	1.400	40.000	3.29%	-1.85%
10/11/2021	1900 Head		1900	1.456	39.247	1.400	40.000	4.00%	-1.88%
			1905	1.459	39.242	1.400	40.000	4.21%	-1.90%
			1910	1.462	39.236	1.400	40.000	4.43%	-1.91%
			1850	1.420	39.467	1.400	40.000	1.43%	-1.33%
			1860	1.427	39.445	1.400	40.000	1.93%	-1.39%
10/13/2021	1900 Head	22.3	1880	1.439	39.417	1.400	40.000	2.79%	-1.46%
10/13/2021	1900 Head	22.5	1900	1.450	39.393	1.400	40.000	3.57%	-1.52%
			1905	1.453	39.388	1.400	40.000	3.79%	-1.53%
			1910	1.456	39.381	1.400	40.000	4.00%	-1.55%
			1850	1.433	39.784	1.400	40.000	2.36%	-0.54%
			1860	1.439	39.761	1.400	40.000	2.79%	-0.60%
11/03/2021	1900 Head	21.0	1880	1.451	39.731	1.400	40.000	3.64%	-0.67%
			1900	1.461	39.710	1.400	40.000	4.36%	-0.72%
			1905 1910	1.464 1.466	39.703 39.696	1.400 1.400	40.000 40.000	4.57% 4.71%	-0.74% -0.76%
			2300	1.688	39.737	1.670	39.500	1.08%	0.60%
			2310	1.701	39.700	1.679	39.480	1.31%	0.56%
			2320	1.713	39.664	1.687	39.460	1.54%	0.52%
			2400	1.805	39.319	1.756	39.289	2.79%	0.08%
			2450	1.863	39.137	1.800	39.200	3.50%	-0.16%
			2480	1.896	39.004	1.833	39.162	3.44%	-0.40%
40/44/0004	045011	00.7	2500	1.920	38.912	1.855	39.136	3.50%	-0.57%
10/11/2021	2450 Head	23.7	2510	1.933	38.869	1.866	39.123	3.59%	-0.65%
			2535	1.963	38.779	1.893	39.092	3.70%	-0.80%
			2550	1.980	38.725	1.909	39.073	3.72%	-0.89%
			2560	1.991	38.686	1.920	39.060	3.70%	-0.96%
			2600	2.039	38.512	1.964	39.009	3.82%	-1.27%
			2650	2.098	38.309	2.018	38.945	3.96%	-1.63%
						2.051	38.907		

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 50 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 58 of 107

Table 10-2 Measured Head Tissue Properties (Cont.)

IVIC	asui	eu i ie	au i	ISSUC	ן טווי	Jei tie	.3 (C	OIIL.	
Calibrated for lests Performed	Tissue Type	Tissue Temp During Calibration	Measured Frequency (MHz)	Measured Conductivity,	Measured Dielectric	TARGET Conductivity,	TARGET Dielectric	% dev σ	% dev
on:		(,c)	(MHz) 2300	σ (S/m) 1 668	Constant, ε 38.910	σ (S/m) 1.670	Constant, a 39.500	-0.12%	-1.49%
			2310	1.679	38.875	1.679	39.480	0.00%	-1.53%
			2320 2400	1.691	38.845 38.533	1.687	39.460 39.289	0.24%	-1.56% -1.92%
			2450 2480	1.840 1.873	38.358 38.228	1.800 1.833	39.200 39.162	2.22%	-2.15% -2.38%
			2500	1.873	38.228	1.833	39.162	2.32%	-2.54%
11/10/2021	2450 Head	24.3	2510 2535	1.910	38.102 38.004	1.866	39.123 39.092	2.36%	-2.619 -2.789
			2550	1.958	37.945	1.909	39.073	2.57%	-2.899
			2560 2600	1.970 2.014	37.904 37.734	1.920 1.964	39.060 39.009	2.60%	-2.969 -3.279
			2650 2680	2.075	37.517	2.018	38.945	2.82%	-3.679
			2680	2.108 2.130	37.397 37.316	2.051	38.907 38.882	2.75%	-3.889 -4.039
			2300 2310	1.667 1.679	38.966 38.931	1.670 1.679	39.500 39.480	-0.18% 0.00%	-1.359 -1.399
			2320	1.690	38.898	1.687	39.460	0.18%	-1.429
			2400 2450	1.781 1.839	38.582 38.410	1.756 1.800	39.289 39.200	1.42%	-1.809 -2.029
			2480 2500	1.872 1.896	38.271 38.179	1.833 1.855	39.162 39.136	2.13%	-2.289 -2.459
11/22/2021	2450 Head	24.3	2510	1.909	38.138	1.866	39.123	2.30%	-2.529
			2535 2550	1.940 1.957	38.051 38.002	1.893	39.092 39.073	2.48%	-2.669
			2560	1.968 2.014	37.964	1.920 1.964	39.060 39.009	2.50%	-2.819 -3.149
			2600 2650	2.075	37.785	2.018	38.945	2.82%	-3.529
			2680 2700	2.110	37.447 37.366	2.051	38.907	2.88%	-3.759 -3.909
			5180	4.655	36.359	4.635	36.009	0.43%	0.97%
			5190 5200	4.669 4.683	36.343 36.328	4.645 4.655	35.998 35.986	0.52%	0.96%
			5210 5220	4.697 4.708	36.310 36.297	4.666 4.676	35.975 35.963	0.66%	0.93%
			5240	4.731	36.273	4.696	35.940	0.75%	0.93%
			5250 5260	4.744 4.755	36.251 36.231	4.706 4.717	35.929 35.917	0.81%	0.90%
			5270	4.767	36.219	4.727	35.906	0.85%	0.87%
			5280 5290	4.781 4.797	36.201 36.181	4.737 4.748	35.894 35.883	0.93%	0.86%
			5300 5310	4.809 4.819	36.164 36.150	4.758 4.768	35.871 35.860	1.07%	0.82%
			5320	4.827	36.147	4.778	35.849	1.03%	0.83%
			5500 5510	5.015 5.027	35.809 35.776	4.963 4.973	35.643 35.632	1.05%	0.47%
			5520 5530	5.037 5.046	35.742 35.719	4.983 4.994	35.620	1.08%	0.349
			5540	5.057	35.697	5.004	35.609 35.597	1.04%	0.31%
			5550 5560	5.069	35.678 35.659	5.014 5.024	35.586 35.574	1.10%	0.26%
			5580	5.108	35.627	5.045	35.551	1.25%	0.21%
12/03/2021	5200-5800 Head	20.5	5600 5610	5.133 5.146	35.578 35.559	5.065	35.529 35.518	1.34%	0.14%
12/03/2021	5200-5600 Head	20.5	5620 5640	5.160 5.185	35.541 35.504	5.086 5.106	35.506 35.483	1.45%	0.109
			5660	5.210	35.458	5.127	35.460	1.62%	-0.019
			5670 5680	5.226 5.240	35.439 35.427	5.137 5.147	35.449 35.437	1.73%	-0.039
			5690 5700	5.253 5.266	35.417 35.405	5.158 5.168	35.426 35.414	1.84%	-0.035
			5710	5.280	35.387	5.178	35.403	1.97%	-0.059
			5720 5745	5.293 5.329	35.358 35.323	5.188 5.214	35.391 35.363	2.02%	-0.099 -0.119
			5750 5755	5.334 5.342	35.318 35.314	5.219 5.224	35.357 35.351	2.20%	-0.111
			5765	5.355	35.305	5.234	35.340	2.31%	-0.109
			5775 5785	5.367 5.379	35.290 35.277	5.245 5.255	35.329 35.317	2.33%	-0.119 -0.119
			5795 5805	5.393 5.407	35.257 35.238	5.265 5.275	35.305 35.294	2.43%	-0.149
			5825	5.428	35.208	5.296	35.271	2.49%	-0.169 -0.189
			5835 5845	5.437 5.449	35.183 35.167	5.305 5.315	35.230 35.210	2.49%	-0.139 -0.129
			5855	5.462	35.159	5.325	35.197	2.57%	-0.119 -0.159
			5875 5885	5.483 5.491	35.131 35.119	5.347 5.357	35.183 35.177	2.54% 2.50%	-0.169
			5905 5180	5.510 4.574	35.082 35.905	5.379 4.635	35.163 36.009	2.44%	-0.239
			5190	4.587	35.881	4.645	35.998	-1.25%	-0.339
			5200 5210	4.598 4.609	35.858 35.837	4.655 4.666	35.986 35.975	-1.22% -1.22%	-0.369
			5220 5240	4.619	35.825	4.676	35.963	-1.22%	-0.389
			5250	4.639 4.649	35.788 35.758	4.696 4.706	35.940 35.929	-1.21% -1.21%	-0.421 -0.481
			5260 5270	4.657 4.667	35.738 35.719	4.717 4.727	35.917 35.906	-1.27% -1.27%	-0.501 -0.521
			5280 5290	4.679 4.693	35.698 35.675	4.737 4.748	35.894 35.883	-1.22% -1.16%	-0.559
	1		5300	4.704	35.652	4.758	35.871	-1.13%	-0.581
	1		5310 5320	4.716 4.729	35.639 35.623	4.768 4.778	35.860 35.849	-1.09% -1.03%	-0.621 -0.631
	1		5500	4.926	35.270	4.963	35.643	-0.75%	-1.059
			5510 5520	4.938 4.952	35.246 35.226	4.973 4.983	35.632 35.620	-0.70% -0.62%	-1.081 -1.111
			5530	4.968	35.203	4.994	35.609	-0.52%	-1.149
			5540 5550	4.983 4.997	35.180 35.162	5.004 5.014	35.597 35.586	-0.42% -0.34%	-1.175 -1.195
	1		5560 5580	5.009 5.030	35.152 35.124	5.024 5.045	35.574 35.551	-0.30% -0.30%	-1.191 -1.201
	1		5600	5.051	35.077	5.065	35.529	-0.28%	-1.275
	1		5610 5620	5.064 5.077	35.059 35.041	5.076 5.086	35.518 35.506	-0.24% -0.18%	-1.291
12/06/2021	5200-5800 Head	22.0	5640 5660	5.104 5.133	34.993 34.975	5.106 5.127	35.483 35.460	-0.04% 0.12%	-1.381
			5670	5.144	34.967	5.137	35.449	0.14%	-1.369
			5680 5690	5.152 5.163	34.952 34.932	5.147 5.158	35.437 35.426	0.10%	-1.375 -1.395
			5700	5.175	34.913	5.168	35.414	0.14%	-1.419
			5710 5720	5.188 5.200	34.895 34.877	5.178 5.188	35.403 35.391	0.19%	-1.435 -1.455
			5745	5.229	34.818	5.214	35.363	0.29%	-1.549
	1		5750 5755	5.236 5.242	34.811 34.805	5.219 5.224	35.357 35.351	0.33% 0.34%	-1.549 -1.549
	1		5765 5775	5.257 5.267	34.796 34.787	5.234 5.245	35.340 35.329	0.44%	-1.549 -1.539
			5785	5.275	34.776	5.255	35.317	0.38%	-1.539
			5795	5.286	34.769 34.765	5.265 5.270	35.305 35.300	0.40%	-1.521 -1.521
			5800 5800	5.293 5.293	34.765	5.270	35.300	0.44%	-1.521
			5800			5.270 5.275 5.296	35.300 35.294 35.271	0.44% 0.45% 0.40%	-1.529
			5800 5800 5805 5825 5835	5.293 5.299 5.317 5.327	34.765 34.757 34.707 34.684	5.275 5.296 5.305	35.294 35.271 35.230	0.45% 0.40% 0.41%	-1.529 -1.609 -1.559
			5800 5800 5805 5825 5835 5845 5855	5.293 5.299 5.317 5.327 5.339 5.356	34.765 34.757 34.707 34.684 34.671 34.659	5.275 5.296 5.305 5.315 5.325	35.294 35.271 35.230 35.210 35.197	0.45% 0.40% 0.41% 0.45% 0.58%	-1.529 -1.609 -1.559 -1.539
			5800 5800 5805 5825 5835 5845	5.293 5.299 5.317 5.327 5.339	34.765 34.757 34.707 34.684 34.671	5.275 5.296 5.305 5.315	35.294 35.271 35.230 35.210	0.45% 0.40% 0.41% 0.45%	-1.529 -1.529 -1.609 -1.559 -1.539 -1.579 -1.609

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 50 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 59 of 107

Table 10-3 Measured Body Tissue Properties

		IVIC	asuleu L	Joury 1133	ue Frope	1103			
Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (°C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
			680	0.939	55.603	0.958	55.804	-1.98%	-0.36%
			695	0.945	55.555	0.959	55.745	-1.46%	-0.34%
			700	0.947	55.539	0.959	55.726	-1.25%	-0.34%
			710	0.950	55.505	0.960	55.687	-1.04%	-0.33%
10/26/2021	750 Body	20.9	725	0.955	55.461	0.961	55.629	-0.62%	-0.30%
			750	0.964	55.393	0.964	55.531	0.00%	-0.25%
			770	0.972	55.348	0.965	55.453	0.73%	-0.19%
			785	0.978	55.322	0.966	55.395	1.24%	-0.13%
			800	0.984	55.288	0.967	55.336	1.76%	-0.09%
			815	0.973	55.014	0.968	55.271	0.52%	-0.46%
10/24/2021	835 Body	21.5	820	0.975	55.006	0.969	55.258	0.62%	-0.46%
			835	0.982	54.992	0.970	55.200	1.24%	-0.38%
			850	0.989	54.981	0.988	55.154	0.10%	-0.31%
			815	0.998	53.569	0.968	55.271	3.10%	-3.08%
40/00/0004	005 D-+-	00.0	820	1.000	53.559	0.969	55.258	3.20%	-3.07%
10/28/2021	835 Body	20.9	835	1.006	53.523	0.970	55.200	3.71%	-3.04%
			850	1.012	53.471	0.988	55.154	2.43%	-3.05%
			815	0.994	53.104	0.968	55.271	2.69%	-3.92%
11/01/2021	835 Body	21.2	820	0.996	53.095	0.969	55.258	2.79%	-3.91%
	,		835	1.001	53.062	0.970	55.200	3.20%	-3.87%
			850	1.006	53.031	0.988	55.154	1.82%	-3.85%
			1710	1.461	52.091	1.463	53.537	-0.14%	-2.70%
			1720	1.466	52.085	1.469	53.511	-0.20%	-2.66%
			1745	1.481	52.059	1.485	53.445	-0.27%	-2.59%
10/12/2021	1750 Body	22.3	1750	1.484	52.054	1.488	53.432	-0.27%	-2.58%
			1770	1.498	52.037	1.501	53.379	-0.20%	-2.51%
			1790	1.512	52.028	1.514	53.326	-0.13%	-2.43%
			1710	1.446	52.814	1.463	53.537	-1.16%	-1.35%
			1720	1.452	52.807	1.469	53.511	-1.16%	-1.32%
40/40/0004	4750 D		1745	1.467	52.779	1.485	53.445	-1.21%	-1.25%
10/13/2021	1750 Body	20.6	1750	1.470	52.773	1.488	53.432	-1.21%	-1.23%
			1770	1.485	52.746	1.501	53.379	-1.07%	-1.19%
			1790	1.500	52.728	1.514	53.326	-0.92%	-1.12%
			1710	1.463	51.854	1.463	53.537	0.00%	-3.14%
			1720	1.469	51.845	1.469	53.511	0.00%	-3.11%
10/14/2021	1750 Body	21.8	1745	1.484	51.808	1.485	53.445	-0.07%	-3.06%
10/14/2021	1700 Dody	21.0	1750	1.488	51.798	1.488	53.432	0.00%	-3.06%
			1770	1.502	51.765	1.501	53.379	0.07%	-3.02%
			1790	1.516	51.743	1.514	53.326	0.13%	-2.97%
			1710	1.417	51.845	1.463	53.537	-3.14%	-3.16%
			1720	1.423	51.840	1.469	53.511	-3.13%	-3.12%
			1745	1.438	51.814	1.485	53.445	-3.16%	-3.05%
10/18/2021	1750 Body	20.6	1750	1.442			53.432	-3.09%	-3.04%
					51.806	1.488			
			1770	1.455	51.783	1.501	53.379	-3.06%	-2.99%
			1790	1.470	51.772	1.514	53.326	-2.91%	-2.91%
			1710	1.392	51.893	1.463	53.537	-4.85%	-3.07%
			1720	1.397	51.893	1.469	53.511	-4.90%	-3.02%
4446:	4750 - 1	05.5	1745	1.411	51.880	1.485	53.445	-4.98%	-2.93%
11/12/2021	1750 Body	22.0	1750	1.414	51.876	1.488	53.432	-4.97%	-2.91%
			1770	1.428	51.855	1.501	53.379	-4.86%	-2.86%
			1770	1.442	51.842	1.514	53.326	-4.76%	-2.78%
		+							
			1710	1.413	53.149	1.463	53.537	-3.42%	-0.72%
			1720	1.421	53.139	1.469	53.511	-3.27%	-0.70%
11/17/2021	1750 Body	20.1	1745	1.439	53.093	1.485	53.445	-3.10%	-0.66%
11/11/2021	1750 Body	20.1	1750	1.442	53.081	1.488	53.432	-3.09%	-0.66%
			1770	1.457	53.040	1.501	53.379	-2.93%	-0.64%
			1790	1.471	53.012	1.514	53.326	-2.84%	-0.59%
		1	1710					-3.62%	-2.68%
				1.410	52.104	1.463	53.537		
			1720	1.416	52.097	1.469	53.511	-3.61%	-2.64%
11/24/2021	1750 Body	20.1	1745	1.432	52.081	1.485	53.445	-3.57%	-2.55%
	,		1750	1.435	52.076	1.488	53.432	-3.56%	-2.54%
			1770	1.449	52.056	1.501	53.379	-3.46%	-2.48%
			1790	1.463	52.042	1.514	53.326	-3.37%	-2.41%
			1710	1.434	52.596	1.463	53.537	-1.98%	-1.76%
			1720	1.442	52.584	1.469	53.511	-1.84%	-1.73%
			1745	1.460	52.549	1.485	53.445		-1.68%
12/12/2021	1750 Body	21.2						-1.68%	
			1750	1.463	52.542	1.488	53.432	-1.68%	-1.67%
			1770	1.477	52.511	1.501	53.379	-1.60%	-1.63%
			1790	1.491	52.480	1.514	53.326	-1.52%	-1.59%

FCC ID: A3LSMS901E	Poud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Dama 60 of 107	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Page 60 of 107	

Table 10-4 Measured Body Tissue Properties (Cont.)

Measured Body Tissue Properties (Cont.)											
Calibrated for		Tissue Temp	Measured	Measured	Measured	TARGET	TARGET				
Tests Performed	Tissue Type	During Calibration	Frequency	Conductivity,	Dielectric	Conductivity,	Dielectric	% dev σ	% dev ε		
on:		(°C)	(MHz)	σ (S/m)	Constant, ε	σ (S/m)	Constant, ε				
			1850	1.554	51.928	1.520	53.300	2.24%	-2.57%		
			1860	1.562	51.909	1.520	53.300	2.76%	-2.61%		
40/40/0004	10/10/0001 1000 D 1	22.2	1880	1.575	51.885	1.520	53.300	3.62%	-2.65%		
10/12/2021	1900 Body	22.3	1900	1.588	51.872	1.520	53.300	4.47%	-2.68%		
			1905	1.591	51.866	1.520	53.300	4.67%	-2.69%		
			1910	1.594	51.861	1.520	53.300	4.87%	-2.70%		
			1850	1.545	52.625	1.520	53.300	1.64%	-1.27%		
			1860	1.552	52.606	1.520	53.300	2.11%	-1.30%		
			1880	1.566	52.578	1.520	53.300	3.03%	-1.35%		
10/13/2021	1900 Body	20.6	1900	1.579	52.554	1.520	53.300	3.88%	-1.40%		
			1905	1.583	52.545	1.520	53.300	4.14%	-1.42%		
			1910	1.586	52.535	1.520	53.300	4.34%	-1.44%		
			1850	1.543	51.487	1.520	53.300	1.51%	-3.40%		
			1860	1.550	51.471	1.520	53.300	1.97%	-3.43%		
			1880	1.564	51.446	1.520	53.300	2.89%	-3.48%		
10/18/2021	1900 Body	22.0	1900	1.577	51.424	1.520	53.300	3.75%	-3.52%		
			1905	1.580	51.416	1.520	53.300	3.95%	-3.53%		
					1910	1.583	51.407	1.520	53.300	4.14%	-3.55%
			1850	1.514	51.686	1.520	53.300	-0.39%	-3.03%		
			1860	1.521	51.667	1.520	53.300	0.07%	-3.06%		
			1880	1.536	51.641	1.520	53.300	1.05%	-3.11%		
10/18/2021	10/18/2021 1900 Body	20.6	1900	1.549	51.618	1.520	53.300	1.03%	-3.11%		
			1900	1.552	51.612	1.520	53.300	2.11%	-3.17%		
				1910					2.11%		
						1.555	51.603	1.520	53.300		-3.18%
			1850	1.532	52.905	1.520	53.300	0.79%	-0.74%		
			1860	1.541	52.885	1.520	53.300	1.38%	-0.78%		
10/20/2021	1900 Body	22.5	1880	1.557	52.853	1.520	53.300	2.43%	-0.84%		
			1900	1.572	52.822	1.520	53.300	3.42%	-0.90%		
			1905	1.576	52.813	1.520	53.300	3.68%	-0.91%		
			1910	1.579	52.802	1.520	53.300	3.88%	-0.93%		
			2300	1.812	52.341	1.809	52.900	0.17%	-1.06%		
			2310	1.826	52.315	1.816	52.887	0.55%	-1.08%		
			2320	1.840	52.288	1.826	52.873	0.77%	-1.11%		
			2400	1.949	51.982	1.902	52.767	2.47%	-1.49%		
			2450	2.019	51.823	1.950	52.700	3.54%	-1.66%		
			2480	2.059	51.673	1.993	52.662	3.31%	-1.88%		
			2500	2.088	51.596	2.021	52.636	3.32%	-1.98%		
10/14/2021	2450 Body	22.5	2510	2.103	51.568	2.035	52.623	3.34%	-2.00%		
			2535	2.140	51.496	2.071	52.592	3.33%	-2.08%		
			2550	2.161	51.436	2.092	52.573	3.30%	-2.16%		
			2560	2.174	51.389	2.106	52.560	3.23%	-2.23%		
			2600	2.230	51.202	2.163	52.509	3.10%	-2.49%		
			2650	2.303	51.024	2.234	52.445	3.09%	-2.71%		
			2680	2.343	50.900	2.277	52.407	2.90%	-2.88%		
			2700	2.370	50.812	2.305	52.382	2.82%	-3.00%		

FCC ID: A3LSMS901E	Poud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 61 of 107	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 61 01 107

Table 10-5 Measured Body Tissue Properties (Cont.)

Calibrated for	<u> </u>	Tissue Temp	Measured	Measured	Measured	TARGET	TARGET		,
Tests Performed on:	Tissue Type	During Calibration (°C)	Frequency (MHz)	Conductivity, σ (S/m)	Dielectric Constant, s	Conductivity, σ (S/m)	Dielectric Constant, s	% dev σ	% dev i
OII.		(0)	2300	1.812	52.252	1.809	52.900	0.17%	-1.22%
			2310 2320	1.824	52.220 52.199	1.816 1.826	52.887 52.873	0.44%	-1.26% -1.27%
			2400	1.838	51.897	1.902	52.767	2.42%	-1.65%
			2450 2480	2.015 2.056	51.740 51.611	1.950 1.993	52.700 52.662	3.33%	-1.82% -2.00%
			2500	2.085	51.522	2.021	52.636	3.17%	-2.12%
10/18/2021	2450 Body	22.0	2510 2535	2.100	51.489 51.410	2.035 2.071	52.623 52.592	3.19%	-2.15%
			2550	2.156	51.377	2.092	52.573	3.06%	-2.27%
			2560 2600	2.170	51.314 51.142	2.106 2.163	52.560 52.509	3.04%	-2.37% -2.60%
			2650	2.298	50.966	2.234	52.445	2.86%	-2.82%
			2680 2700	2.341	50.843 50.761	2.277	52.407 52.382	2.81% 2.69%	-2.98% -3.09%
			2300 2310	1.809 1.823	53.403 53.374	1.809 1.816	52.900 52.887	0.00%	0.95% 0.92%
			2320	1.836	53.347	1.826	52.873	0.55%	0.90%
			2400 2450	1.943 2.013	53.081 52.930	1.902 1.950	52.767 52.700	2.16% 3.23%	0.60%
			2480	2.053	52.803	1.993	52.662	3.01%	0.27%
11/03/2021	2450 Body	22.3	2500 2510	2.083	52.724 52.690	2.021	52.636 52.623	3.07%	0.17%
			2535	2.134	52.611	2.071	52.592	3.04%	0.04%
			2550 2560	2.155 2.168	52.580 52.520	2.092 2.106	52.573 52.560	3.01% 2.94%	-0.02% -0.08%
			2600 2650	2.227 2.299	52.346 52.151	2.163 2.234	52.509 52.445	2.96% 2.91%	-0.31% -0.56%
			2680	2.342	52.028	2.277	52.407	2.85%	-0.72%
			2700 2300	2.370 1.856	51.946 53.388	2.305 1.809	52.382 52.900	2.82%	-0.83% 0.92%
			2310	1.868	53.362	1.816	52.887	2.86%	0.90%
			2320 2400	1.879	53.339 53.136	1.826	52.873 52.767	2.90% 3.68%	0.88%
			2450	2.031	53.010	1.950	52.700	4.15%	0.59%
			2480 2500	2.066	52.928 52.870	1.993 2.021	52.662 52.636	3.66%	0.51%
12/13/2021	2450 Body	23.9	2510	2.102	52.842	2.035	52.623	3.29%	0.42%
			2535 2550	2.133 2.152	52.771 52.730	2.071 2.092	52.592 52.573	2.99% 2.87%	0.34%
			2560 2600	2.164 2.211	52.703	2.106 2.163	52.560 52.509	2.75%	0.27%
			2650	2.273	52.442	2.234	52.445	1.75%	-0.019
	1	1	2680 2700	2.309	52.365 52.308	2.277	52.407 52.382	1.41%	-0.08% -0.14%
			5180	5.248	47.025	5.276	49.041	-0.53%	-4.119
	1	1	5190 5200	5.261 5.272	47.003 46.978	5.288 5.299	49.028 49.014	-0.51% -0.51%	-4.139 -4.159
	1	1	5210	5.286	46.959	5.311	49.001	-0.47%	-4.17%
			5220 5240	5.296 5.330	46.935 46.882	5.323 5.346	48.987 48.960	+0.51% +0.30%	-4.199 -4.249
	1	1	5250	5.345	46.858	5.358	48,947	-0.24%	-4.27%
			5260 5270	5.358	46.844 46.838	5.369 5.381	48.933 48.919	-0.20% -0.20%	-4.279 -4.259
			5280 5290	5.384	46.821	5.393	48.906	-0.17%	-4.269 -4.279
			5300	5.407	46.803 46.783	5.404 5.416	48.892 48.879	-0.15% -0.17%	-4.27% -4.29%
			5310 5320	5.420 5.435	46.768	5.428 5.439	48.865 48.851	-0.15% -0.07%	-4.299 -4.299
			5500	5.681	46.753 46.410	5.650	48.851 48.607	0.55%	-4.299 -4.529
			5510 5520	5.697 5.714	46.392 46.381	5.661 5.673	48.594 48.580	0.64%	-4.53% -4.53%
			5530	5.730	46.365	5.685	48.566	0.79%	-4.53%
			5540 5550	5.744 5.758	46.351 46.335	5.696 5.708	48.553 48.539	0.84%	-4.549 -4.549
			5560	5.772	46.322	5.720	48.526	0.91%	-4.54%
			5580 5600	5.799 5.827	46.272 46.225	5.743 5.766	48.499 48.471	0.98%	-4.599 -4.639
			5610	5.843	46.211	5.778	48.458 48.444	1.12%	-4.649 -4.659
12/14/2021 5200-5800 Body	5200-5800 Body	23.0	5620 5640	5.890	46.189	5.790 5.813	48.444	1.19%	-4.609 -4.679
			5660 5670	5.918 5.929	46.130 46.121	5.837 5.848	48.390 48.376	1.39%	-4.679 -4.669
			5680	5.941	46.105	5.860	48.363	1.38%	-4.679
			5690 5700	5.954 5.968	46.085 46.061	5.872 5.883	48.349 48.336	1.40%	-4.689 -4.719
			5710	5.982	46.037	5.895	48.322	1.48%	-4.73%
			5720 5745	5.998 6.038	46.017 45.963	5.907 5.936	48.309 48.275	1.54%	-4.749 -4.799
			5750	6.046	45.954	5.942	48.268	1.75%	-4.79%
			5755 5765	6.053 6.067	45.937	5.947 5.959	48.261 48.248	1.78%	-4.809 -4.799
			5775 5785	6.078 6.090	45.930 45.922	5.971 5.982	48.234 48.220	1.79%	-4.78% -4.77%
			5795	6.104	45.906	5.994	48.207	1.84%	-4.77%
			5800 5805	6.111 6.117	45.895 45.884	6.000 6.006	48.200 48.193	1.85%	-4.78% -4.79%
			5825	6.139	45.838	6.029	48.166	1.82%	-4.839 -4.849
			5835 5845	6.157 6.177	45.802 45.779	6.042 6.054	48.130 48.110	2.03%	-4.84% -4.85%
			5855	6.195 6.211	45.761 45.744	6.066	48.093	2.13%	-4.859 -4.869
			5865 5875	6.221	45.735	6.077 6.088	48.080 48.067	2.18%	-4.859
	1	1	5885 5905	6.234 6.263	45.712 45.675	6.100 6.122	48.053 48.027	2.20%	-4.879 -4.909
			5180	5.359	47.570	5.276	49.041	1.57%	-3.00%
			5190 5200	5.373 5.389	47.553 47.531	5.288 5.299	49.028 49.014	1.61%	-3.019 -3.039
	1	1	5210 5220	5.401	47.510	5.311	49.001 48.987	1.69%	-3.049
	1	1	5240	5.412 5.442	47.486 47.433	5.323 5.346	48.960	1.67%	-3.069 -3.129
	1	1	5250 5260	5.456 5.469	47.405 47.392	5.358 5.369	48.947 48.933	1.83%	-3.159 -3.159
	1	1	5270	5.482	47.385	5.381	48.919	1.88%	-3.14%
	1	1	5280 5290	5.496 5.509	47.375 47.362	5.393 5.404	48.906 48.892	1.91%	-3.13% -3.13%
			5300	5.522	47.352 47.344	5.416 5.428	48.879	1.96%	-3.129
	1	1	5310 5320	5.538 5.554	47.344 47.326	5.428 5.439	48.865 48.851	2.03%	-3.119 -3.129
	1	1	5500	5.803	46.991	5.650	48.607 48.594	2.71%	-3.32%
			5510 5520	5.819 5.835	46.977 46.965	5.661 5.673	48.580	2.86%	-3.33% -3.32%
	1	1	5530 5540	5.852	46.949 46.934	5.685 5.696	48.566 48.553	2.94% 2.97%	-3.339 -3.339
	1	1	5550	5.880	46.919	5.708	48.539	3.01%	-3.349
	1	1	5560 5580	5.896 5.923	46.905 46.857	5.720 5.743	48.526 48.499	3.08%	-3.349 -3.399
	1	1	5600	5.949	46,809	5.766	48.471	3.17%	-3.439
12/09/2021	rana re	22.8	5610 5620	5.966 5.982	46.793 46.777	5.778 5.790	48.458 48.444	3.25% 3.32%	-3.449 -3.449
-2/USI/2U21	5200-5800 Body	22.8	5640 5660	6.012	46.735	5.813	48.417 48.390	3.42%	-3.479
	1	1	5670	6.042 6.053	46.706 46.696	5.837 5.848	48.376	3.51%	-3.48% -3.47%
	1	1	5680 5690	6.064 6.076	46.679 46.653	5.860 5.872	48.363 48.349	3.48%	-3.48% -3.51%
	1	1	5700	6.091	46.626	5.883	48.336	3.54%	-3.54%
	1	1	5710 5720	6.108 6.126	46.603 46.579	5.895 5.907	48.322 48.309	3.61% 3.71%	-3.56% -3.56%
	1	1	5745	6.161	46.522	5.936	48.275	3.79%	-3.63%
	1	1	5750 5755	6.169 6.176	46.514 46.507	5.942 5.947	48.268 48.261	3.82% 3.85%	-3.63% -3.63%
	1	1	5765	6.189	46.490	5.959	48.248	3.86%	-3.64%
	1	1	5775 5785	6.199 6.208	46.475 46.463	5.971 5.982	48.234 48.220	3.82%	-3.65% -3.64%
	ı	1	5795	6.223	46.452	5.994	48.207	3.82%	-3.64%
			5800 5805	6.231 6.238	46.441 46.428	6.000 6.006	48.200 48.193	3.85% 3.86%	-3.65% -3.66%
						6.029	48.166	3.85%	-3.75%
			5825	6.261	46.358	6.610	40.100	3.65%	
				6.261 6.273 6.290	46.342 46.324	6.042 6.054	48.130 48.110	3.82%	-3.71%
			5825 5835 5845 5855	6.273 6.290 6.309	46.342 46.324 46.298	6.042 6.054 6.066	48.130 48.110 48.093	3.82% 3.90% 4.01%	-3.719 -3.719 -3.739
			5825 5835 5845	6.273 6.290	46.342 46.324	6.042 6.054	48.130 48.110	3.82% 3.90%	-3.71% -3.71% -3.73% -3.77% -3.81% -3.82%

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Dogg 62 of 407	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 62 of 107

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2. The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 63 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 63 01 107

10.2 Test System Verification

Prior to SAR assessment, the system is verified to $\pm 10\%$ of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Appendix F.

> **Table 10-6** System Verification Results - 1g Head

	Oystem Vermouton Results – Ty nead														
							m Verificat								
						TARGE	T & MEASU	JKED							
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR1g (W/kg)	1W Target SAR1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation1g (%)			
K2	750	HEAD	10/21/2021	21.6	21.3	0.20	1034	7402	1.720	8.64	8.600	-0.46%			
K2	835	HEAD	10/24/2021	21.8	21.8	0.20	4d180	7402	1.930	9.45	9.650	2.12%			
AM4	835	HEAD	11/10/2021	22.7	21.8	0.20	4d040	7427	1.860	9.50	9.300	-2.11%			
AM2	1750	HEAD	10/08/2021	21.9	21.6	0.10	1083	7532	3.470	36.10	34.700	-3.88%			
AM2	1750	HEAD	11/01/2021	22.3	21.7	0.10	1083	7532	3.440	36.10	34.400	-4.71%			
AM5	1750	HEAD	11/29/2021	21.4	20.5	0.10	1083	7546	3.780	36.10	37.800	4.71%			
AM2	1900	HEAD	10/11/2021	22.1	21.1	0.10	5d030	7532	4.150	39.90	41.500	4.01%			
AM2	1900	HEAD	10/13/2021	23.0	21.3	0.10	5d030	7532	4.020	39.90	40.200	0.75%			
AM2	1900	HEAD	11/03/2021	23.8	21.7	0.10	5d030	7532	4.050	39.90	40.500	1.50%			
AM6	2450	HEAD	10/11/2021	23.5	21.9	0.10	750	7416	5.440	53.10	54.400	2.45%			
AM9	2450	HEAD	11/10/2021	23.9	22.5	0.10	750	3949	5.080	53.10	50.800	-4.33%			
AM9	2450	HEAD	11/22/2021	23.0	22.5	0.10	750	3949	5.230	53.10	52.300	-1.51%			
AM6	2600	HEAD	10/11/2021	23.5	21.9	0.10	1042	7416	6.020	57.70	60.200	4.33%			
AM2	5250	HEAD	12/03/2021	23.5	20.6	0.05	1163	7532	4.010	80.20	80.200	0.00%			
AM2	5600	HEAD	12/03/2021	23.5	20.6	0.05	1163	7532	4.150	83.30	83.000	-0.36%			
AM2	5750	HEAD	12/03/2021	23.5	20.6	0.05	1163	7532	3.950	81.00	79.000	-2.47%			
В	5800	HEAD	12/06/2021	22.5	22.0	0.05	1191	7552	4.020	79.20	80.400	1.52%			

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags C4 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 64 of 107

Table 10-7 System Verification Results - 1g Body

System Verification TARGET & MEASURED

SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	Measured SAR1g (W/kg)	1W Target SAR1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation1g (%)		
K4	750	BODY	10/26/2021	21.0	20.9	0.20	1046	7640	1.700	8.79	8.500	-3.30%		
K4	835	BODY	10/24/2021	21.0	21.5	0.20	4d119	7640	2.020	9.90	10.100	2.02%		
AM5	835	BODY	10/28/2021	21.2	20.8	0.20	4d040	7546	1.980	9.53	9.900	3.88%		
AM5	835	BODY	11/01/2021	22.9	21.5	0.20	4d040	7546	2.020	9.53	10.100	5.98%		
AM5	1750	BODY	10/12/2021	21.9	20.8	0.10	1083	7546	3.920	37.10	39.200	5.66%		
AM3	1750	BODY	10/13/2021	22.2	21.7	0.10	1083	7421	3.890	37.10	38.900	4.85%		
AM5	1750	BODY	10/14/2021	22.3	20.6	0.10	1083	7546	3.980	37.10	39.800	7.28%		
AM3	1750	BODY	11/12/2021	22.5	22.1	0.10	1083	7421	3.680	37.10	36.800	-0.81%		
AM6	1750	BODY	11/24/2021	21.9	21.0	0.10	1083	7416	3.870	37.10	38.700	4.31%		
G	1750	BODY	12/12/2021	22.2	21.2	0.10	1150	7357	3.740	37.80	37.400	-1.06%		
AM5	1900	BODY	10/12/2021	21.9	20.8	0.10	5d030	7546	4.290	39.90	42.900	7.52%		
AM3	1900	BODY	10/13/2021	22.2	21.7	0.10	5d030	7421	4.180	39.90	41.800	4.76%		
AM5	1900	BODY	10/18/2021	21.5	20.9	0.10	5d030	7546	4.290	39.90	42.900	7.52%		
AM9	2450	BODY	10/14/2021	22.2	21.5	0.10	750	3949	4.840	51.00	48.400	-5.10%		
AM6	2450	BODY	11/03/2021	23.3	21.5	0.10	750	7416	5.320	51.00	53.200	4.31%		
K	2450	BODY	12/13/2021	21.9	23.0	0.10	719	3914	5.050	52.00	50.500	-2.88%		
AM9	2600	BODY	10/14/2021	22.2	21.5	0.10	1042	3949	5.530	55.20	55.300	0.18%		
J	5250	BODY	12/14/2021	20.3	21.0	0.05	1057	7526	3.720	74.30	74.400	0.13%		
J	5600	BODY	12/14/2021	20.3	21.0	0.05	1057	7526	3.940	77.40	78.800	1.81%		
J	5750	BODY	12/14/2021	20.3	21.0	0.05	1057	7526	3.620	72.80	72.400	-0.55%		
В	5800	BODY	12/09/2021	23.0	22.5	0.05	1191	7552	3.810	73.50	76.200	3.67%		

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo CE of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 65 of 107

Table 10-8 System Verification Results - 10a

	System vernication Results – 10g														
						•	m Verifica T & MEAS								
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN Measured SAR10g (W/kg)		1W Target SAR10g (W/kg)	1W Normalized SAR10g (W/kg)	Deviation10g (%)			
AM5	1750	BODY	10/14/2021	22.3	20.6	0.10	1083	7546	2.120	19.70	21.200	7.61%			
AM3	1750	BODY	10/18/2021	21.0	20.9	0.10	1083	7421	2.120	19.70	21.200	7.61%			
AM3	1750	BODY	11/17/2021	21.9	20.7	0.10	1083	7421	2.090	19.70	20.900	6.09%			
AM5	1900	BODY	10/18/2021	21.5	20.9	0.10	5d030	7546	2.200	21.10	22.000	4.27%			
AM3	1900	BODY	10/18/2021	21.0	20.9	0.10	5d030	7421	2.110	21.10	21.100	0.00%			
AM5	1900	BODY	10/20/2021	22.3	21.0	0.10	5d030	7546	2.170	21.10	21.700	2.84%			
AM6	2450	BODY	10/18/2021	22.9	21.7	0.10	750	7416	2.460	24.10	24.600	2.07%			
AM6	2600	BODY	10/18/2021	22.9	21.7	0.10	1042	7416	2.570	24.90	25.700	3.21%			
J	5250	BODY	12/14/2021	20.3	21.0	0.05	1057	7526	1.010	20.70	20.200	-2.42%			
J	5600	BODY	12/14/2021	20.3	21.0	0.05	1057	7526	1.100	21.40	22.000	2.80%			
J	5750	BODY	12/14/2021	20.3	21.0	0.05	1057	7526	0.996	20.00	19.920	-0.40%			
В	5800	BODY	12/09/2021	23.0	22.5	0.05	1191	7552	1.080	20.20	21.600	6.93%			

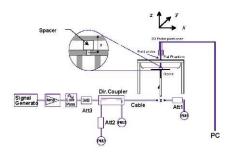


Figure 10-1 **System Verification Setup Diagram**



Figure 10-2 **System Verification Setup Photo**

FCC ID: A3LSMS901E	Poud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 66 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 66 of 107

11 SAR DATA SUMMARY

11.1 Standalone Head SAR Data

Table 11-1 GSM 850 Head SAR

					M	IEASUR	EMENT	RESUL	TS								
FREQUI	ENCY	Mode	Service	Maximum Allowed	Conducted	Power	Side	Test	Antenna	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #		
MHz	Ch.	illoud	0011100	Power [dBm]	Power [dBm]	Drift [dB]	0.00	Position	Config.	Number	Daily Gyolo	(W/kg)	Factor	(W/kg)			
836.60	190	GSM 850	GSM	33.0	31.92	0.01	Right	Cheek	Α	0413M	1:8.3	0.207	1.282	0.265	A1		
836.60	190	GSM 850	GSM	33.0	31.92	0.05	Right	Tilt	Α	0413M	1:8.3	0.107	1.282	0.137			
836.60	190	GSM 850	GSM	33.0	31.92	-0.01	Left	Cheek	Α	0413M	1:8.3	0.158	1.282	0.203			
836.60	190	GSM 850	GSM	33.0	31.92	0.12	Left	Tilt	Α	0413M	1:8.3	0.097	1.282	0.124			
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT						Head										
	Spatial Peak						1.6 W/kg (mW/g)										
	Uncontrolled Exposure/General Population							averaged over 1 gram									

Table 11-2 GSM 1900 Head SAR

FREQUENCY Mode Service Maximum Allowed Power [dBm] Power [dBm] Power [dBm] Side Test Position Antenna Config. Number Serial Number Owing (W/kg) Test (W/kg)	AR Plot #
MHz Ch. Mode Service Mode Service Mode Service Maximum Allowed Power [dBm] Power [dBm] MHz Ch. Maximum Conducted Power [dBm] Drift [dB] Side Position Position Fet delication Position Config. Mumber Maximum Config. Service SAR(19) Scaling Factor (W/kg) Salling Factor (W/kg)	
MHz Ch. Power [dBm] Power [dBm] Dritt [dB] Position Contig. Number (W/kg) Factor (W/kg)	
1850.20 512 GSM 1900 GSM 30.0 29.36 -0.08 Right Cheek A 0827M 1:8.3 0.032 1.159 0.037	
1850.20 512 GSM 1900 GSM 30.0 29.36 -0.06 Right Tilt A 0827M 1:8.3 0.022 1.159 0.025	
1850.20 512 GSM 1900 GSM 30.0 29.36 0.04 Left Cheek A 0827M 1:8.3 0.095 1.159 0.110	A2
1850.20 512 GSM 1900 GSM 30.0 29.36 -0.15 Left Tilt A 0827M 1:8.3 0.019 1.159 0.022	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Head	
Spatial Peak 1.6 W/kg (mW/g)	
Uncontrolled Exposure/General Population averaged over 1 gram	

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo 67 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 67 of 107

Table 11-3 UMTS 850 Head SAR

	OWITS 000 Flead SAIN															
	MEASUREMENT RESULTS															
FREQUE	ENCY	Mode	Service	Maximum Allowed	Conducted	Tune	Power	Side	Test	Antenna	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	Ch.			Power [dBm]	Power [dBm]	State	Drift [dB]		Position	Config.	Number		(W/kg)	Factor	(W/kg)	
836.60	4183	UMTS 850	RMC	25.5	24.13	112	0.03	Right	Cheek	Α	0413M	1:1	0.315	1.371	0.432	A3
836.60	4183	UMTS 850	RMC	25.5	24.13	112	-0.03	Right	Tilt	Α	0413M	1:1	0.162	1.371	0.222	
836.60	4183	UMTS 850	RMC	25.5	24.13	112	-0.03	Left	Cheek	Α	0413M	1:1	0.237	1.371	0.325	
836.60	4183	UMTS 850	RMC	25.5	24.13	112	-0.03	Left	Tilt	Α	0413M	1:1	0.153	1.371	0.210	
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Hea	ad			
	Spatial Peak							1.6 W/kg (mW/g)								
	Uncontrolled Exposure/General Population								averaged over 1 gram							

Table 11-4 UMTS 1750 Head SAR

						MEAS	SUREME	NT RE	SULTS							
FREQUE	ENCY	Mode :	Service	Maximum Allowed	Conducted	Tune	Power	Side	Test	Antenna	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	Ch.			Power [dBm]	Power [dBm]	State	Drift [dB]		Position	Config.	Number		(W/kg)	Factor	(W/kg)	
1752.60	1513	UMTS 1750	RMC	24.0	23.42	114	0.21	Right	Cheek	Α	0866M	1:1	0.084	1.143	0.096	
1752.60	1513	UMTS 1750	RMC	24.0	23.42	114	-0.13	Right	Tilt	Α	0866M	1:1	0.066	1.143	0.075	
1752.60	1513	UMTS 1750	RMC	24.0	23.42	114	0.05	Left	Cheek	Α	0866M	1:1	0.185	1.143	0.211	A4
1752.60	1513	UMTS 1750	RMC	24.0	23.42	114	-0.08	Left	Tilt	Α	0866M	1:1	0.059	1.143	0.067	
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT											Hea	ad			
	Spatial Peak							1.6 W/kg (mW/g)								
	Uncontrolled Exposure/General Population										e	veraged ov	ver 1 gram			

Table 11-5 UMTS 1900 Head SAR

						OIVIT	9 1900	пеа	a SAF	ί						
						MEAS	SUREME	NT RE	SULTS							
FREQUE	ENCY	Mode	Service	Maximum Allowed	Conducted	Tune	Power	Side	Test	Antenna	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	Ch.			Power [dBm]	Power [dBm]	State	Drift [dB]		Position	Config.	Number	. ,	(W/kg)	Factor	(W/kg)	
1852.40	9262	UMTS 1900	RMC	24.7	23.70	19	0.13	Right	Cheek	Α	0831M	1:1	0.103	1.259	0.130	
1852.40	9262	UMTS 1900	RMC	24.7	23.70	19	-0.03	Right	Tilt	Α	0831M	1:1	0.058	1.259	0.073	
1852.40	9262	UMTS 1900	RMC	24.7	23.70	19	-0.03	Left	Cheek	Α	0831M	1:1	0.176	1.259	0.222	A5
1852.40	9262	UMTS 1900	RMC	24.7	23.70	19	0.03	Left	Tilt	Α	0831M	1:1	0.042	1.259	0.053	
		ANSI / IE	EE C95.1 199	2 - SAFETY	LIMIT							Hea	ad		<u> </u>	
			Spatial F	Peak								1.6 W/kg	(mW/g)			
		Uncontroll	led Exposure	General Pop	ulation						а	veraged o	ver 1 gram			

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo 60 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 68 of 107

Table 11-6 LTE Band 12 Head SAR

											- 1100	14 07									
									MEASU	REMEN	NT RESU	ILTS									
FI	REQUENCY	r	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Side	Test	Antenna	Modulation	RB Size	RB Offset	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]			Position	Config.				Number		(W/kg)	Factor	(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	-0.04	0	Right	Cheek	Α	QPSK	1	0	0413M	1:1	0.088	1.028	0.090	
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	0.11	1	Right	Cheek	Α	QPSK	25	25	0413M	1:1	0.085	1.038	0.088	
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	0.00	0	Right	Tilt	Α	QPSK	1	0	0413M	1:1	0.054	1.028	0.056	
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	-0.03	1	Right	Tilt	Α	QPSK	25	25	0413M	1:1	0.051	1.038	0.053	
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	0.00	0	Left	Cheek	Α	QPSK	1	0	0413M	1:1	0.099	1.028	0.102	A6
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	-0.01	1	Left	Cheek	Α	QPSK	25	25	0413M	1:1	0.092	1.038	0.095	
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	-0.04	0	Left	Tilt	Α	QPSK	1	0	0413M	1:1	0.064	1.028	0.066	
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	-0.03	1	Left	Tilt	Α	QPSK	25	25	0413M	1:1	0.063	1.038	0.065	
			IEEE C95.1 1992 Spatial Pe	ak												(mW/g)					
		Uncontr	olled Exposure/G	eneral Pop	ulation									a	veraged o	ver 1 gram					

Table 11-7 LTE Band 13 Head SAR

												- 									
									MEASU	JREMEN	NT RESU	JLTS									
FI	REQUENC	Y	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Side	Test	Antenna	Modulation	RB Size	RB Offset	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	c	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]			Position	Config.				Number	, -,	(W/kg)	Factor	(W/kg)	
782.00	23230	Mid	LTE Band 13	10	0	Right	Cheek	А	QPSK	1	25	0413M	1:1	0.219	1.019	0.223	A7				
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	0.01	1	Right	Cheek	Α	QPSK	25	12	0413M	1:1	0.175	1.023	0.179	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	0.05	0	Right	Tilt	А	QPSK	1	25	0413M	1:1	0.124	1.019	0.126	
782.00	23230	Mid	LTE Band 13	10	23.5	0.05	1	Right	Tilt	А	QPSK	25	12	0413M	1:1	0.101	1.023	0.103			
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	0.05	0	Left	Cheek	А	QPSK	1	25	0413M	1:1	0.162	1.019	0.165	
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	0.02	1	Left	Cheek	Α	QPSK	25	12	0413M	1:1	0.132	1.023	0.135	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	0.04	0	Left	Tilt	Α	QPSK	1	25	0413M	1:1	0.112	1.019	0.114	
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	0.11	1	Left	Tilt	Α	QPSK	25	12	0413M	1:1	0.094	1.023	0.096	
		ANSI /	IEEE C95.1 1992	- SAFETY	LIMIT											Head					
			Spatial Pe	ak											161	V/kg (mW/	'a)				
		Uncentr	•		ulation											• •	-				
		Unicontr	olled Exposure/G	serier al Pop	เนเสนเบก										averac	ed over 1 o	li ai i i				

Table 11-8 LTE Band 26 (Cell) Head SAR

							LI		nu z	<u>0 (C</u>	eli) r	ieau	SAR								
									MEASU	REMEN	T RESUI	LTS									
F	REQUENCY	′	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Side	Test	Antenna	Modulation	RB Size	RB Offset	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]			Position	Config.				Number		(W/kg)	Factor	(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	0.08	0	Right	Cheek	Α	QPSK	1	36	0413M	1:1	0.244	1.059	0.258	A8		
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	112	0.05	1	Right	Cheek	Α	QPSK	36	0	0413M	1:1	0.187	1.057	0.198	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	112	0.17	0	Right	Tilt	Α	QPSK	1	36	0413M	1:1	0.126	1.059	0.133	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	112	0.02	1	Right	Tilt	Α	QPSK	36	0	0413M	1:1	0.098	1.057	0.104	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	112	0.00	0	Left	Cheek	Α	QPSK	1	36	0413M	1:1	0.196	1.059	0.208	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	112	0.04	1	Left	Cheek	Α	QPSK	36	0	0413M	1:1	0.152	1.057	0.161	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	112	-0.09	0	Left	Tilt	Α	QPSK	1	36	0413M	1:1	0.132	1.059	0.140	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	112	-0.02	1	Left	Tilt	А	QPSK	36	0	0413M	1:1	0.103	1.057	0.109	
		ANSI	/ IEEE C95.1 1992 -		IMIT											Head					
			Spatial Pea													N/kg (mW/	-				
		Uncont	rolled Exposure/Ge	eneral Popu	ılation										averac	ed over 1 o	ıram				

FCC ID: A3LSMS901E	PCTEST* Proud to be post of ® element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 69 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Fage 69 01 107

Table 11-9 LTE Band 66 (AWS) Head SAR

													O/ 1.1 1								
									MEASU	REMEN	T RESU	LTS									
FF	REQUENCY	,	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Side	Test	Antenna	Modulation	RB Size	RB Offset	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]			Position	Config.				Number	, -,	(W/kg)	Factor	(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	55	-0.03	0	Right	Cheek	Α	QPSK	1	0	0866M	1:1	0.097	1.000	0.097	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	55	0.00	1	Right	Cheek	Α	QPSK	50	25	0866M	1:1	0.090	1.014	0.091	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	26	-0.08	0	Right	Tilt	Α	QPSK	1	0	0866M	1:1	0.068	1.000	0.068	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	26	-0.19	1	Right	Tilt	Α	QPSK	50	25	0866M	1:1	0.052	1.014	0.053	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	26	0.20	0	Left	Cheek	Α	QPSK	1	0	0866M	1:1	0.201	1.000	0.201	A9
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	26	0.11	1	Left	Cheek	Α	QPSK	50	25	0866M	1:1	0.158	1.014	0.160	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	52	-0.06	0	Left	Tilt	Α	QPSK	1	0	0866M	1:1	0.066	1.000	0.066	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	52	0.03	1	Left	Tilt	Α	QPSK	50	25	0866M	1:1	0.052	1.014	0.053	
		ANSI	/ IEEE C95.1 1992 - Spatial Pea		IMIT										1.6 \	Head V/kg (mW/	g)				
		Uncont	rolled Exposure/Ge	eneral Popu	ılation										averaç	ed over 1 g	ıram				

Table 11-10 LTE Band 4 (AWS) Head SAR

									 '		,									
								ME	ASURE	MENT R	ESULTS									
FF	REQUENC	Y	Mode	Bandwidth	Maximum Allowed	Conducted	Power	MPR [dB]	Side	Test	Antenna	Modulation	RB Size	RB Offset	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	c	h.	1	[MHz]	Power [dBm]	Power [dBm]	Drift [dB]			Position	Config.				Number	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(W/kg)	Factor	(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	-0.02	0	Right	Cheek	F	QPSK	1	50	1092M	1:1	0.204	1.167	0.238	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	0.00	0	Right	Cheek	F	QPSK	50	50	1092M	1:1	0.200	1.169	0.234	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	-0.13	0	Right	Tilt	F	QPSK	1	50	1092M	1:1	0.278	1.167	0.324	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	-0.05	0	Right	Tilt	F	QPSK	50	50	1092M	1:1	0.258	1.169	0.302	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	-0.03	0	Left	Cheek	F	QPSK	1	50	1092M	1:1	0.322	1.167	0.376	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	-0.03	0	Left	Cheek	F	QPSK	50	50	1092M	1:1	0.323	1.169	0.378	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	-0.04	0	Left	Tilt	F	QPSK	1	50	1092M	1:1	0.324	1.167	0.378	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	-0.04	0	Left	Tilt	F	QPSK	50	50	1092M	1:1	0.335	1.169	0.392	A10
			ANSI / IEEE C			IIT		_		·		<u> </u>			Head	·			·	
				Spatial Pea										1.6 V	V/kg (mW	/g)				
			Uncontrolled Ex	posure/Ge	neral Popula	ition								averag	ed over 1	gram				

FCC ID: A3LSM	S901E	Proud to be part of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:		Test Dates:	DUT Type:		Dogg 70 of 407
1M2109290114-	01.A3L (Rev2)	10/08/21 – 12/14/21	Portable Handset		Page 70 of 107

Table 11-11 LTE Band 25 (PCS) Head SAR

								. Dui	<u>.u _c</u>	' ' '	<i>,</i> , ,	cau	<u>OAIX</u>								
								ı	MEASUR	EMENT	RESUL	TS									
F	REQUENCY	,	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Side	Test	Antenna	Modulation	RB Size	RB Offset	Device Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]			Position	Config.				Number	, _,	(W/kg)	Factor	(W/kg)	1
1860.00 26140 Low LTE Band 25 (PCS) 20 23.5 23.50 15 -0.06											Cheek	Α	QPSK	1	0	0861M	1:1	0.089	1.000	0.089	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	15	-0.16	1	Right	Cheek	Α	QPSK	50	0	0861M	1:1	0.069	1.026	0.071	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	15	-0.10	0	Right	Tilt	Α	QPSK	1	0	0861M	1:1	0.056	1.000	0.056	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	15	0.09	1	Right	Tilt	Α	QPSK	50	0	0861M	1:1	0.040	1.026	0.041	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	15	-0.03	0	Left	Cheek	Α	QPSK	1	0	0861M	1:1	0.195	1.000	0.195	A11
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	15	-0.02	1	Left	Cheek	Α	QPSK	50	0	0861M	1:1	0.147	1.026	0.151	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	15	-0.04	0	Left	Tilt	Α	QPSK	1	0	0861M	1:1	0.060	1.000	0.060	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	15	-0.17	1	Left	Tilt	Α	QPSK	50	0	0861M	1:1	0.042	1.026	0.043	
			I / IEEE C95.1 1992 - Spatial Peak													Head W/kg (mW/	-				
		Uncon	trolled Exposure/Ger	nerai Popul	ation										averag	ed over 1 o	gram				

Table 11-12 LTE Band 41 Head SAR

											uu c										
								MEAS	UREME	NT RES	ULTS										
Power Class	F	REQUENC	Y	Mode	Bandwidth	Maximum Allowed	Conducted	Power Drift [dB]	MPR [dB]	Side	Test Position	Antenna Config.	Modulation	RB Size	RB Offset	Device Serial	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot#
	MHz	(⊃h.		[MHz]	Power [dBm]	Power [dBm]	Drift (dB)			Position	Config.				Number		(W/kg)	Factor	(W/kg)	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	-0.21	0	Right	Cheek	В	QPSK	1	0	0831M	1:1.58	0.055	1.067	0.059	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	-0.07	1	Right	Cheek	В	QPSK	50	50	0831M	1:1.58	0.041	1.079	0.044	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	-0.04	0	Right	Tilt	В	QPSK	1	0	0831M	1:1.58	0.031	1.067	0.033	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	0.04	1	Right	Tilt	В	QPSK	50	50	0831M	1:1.58	0.020	1.079	0.022	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	0.08	0	Left	Cheek	В	QPSK	1	0	0831M	1:1.58	0.055	1.067	0.059	A12
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	0.07	1	Left	Cheek	В	QPSK	50	50	0831M	1:1.58	0.050	1.079	0.054	
Power Class 2	2549.50	40185	Low-Mid	LTE Band 41	20	26.5	26.31	-0.10	0	Left	Cheek	В	QPSK	1	0	0831M	1:2.31	0.049	1.045	0.051	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	-0.19	0	Left	Tilt	В	QPSK	1	0	0831M	1:1.58	0.055	1.067	0.059	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	-0.03	1	Left	Tilt	В	QPSK	50	50	0831M	1:1.58	0.048	1.079	0.052	
		А	NSI / IEEE	C95.1 1992 - SA	AFETY LIMI	Т					•	•				Head			•		
				Spatial Peak											1.6 V	V/kg (mW/	g)				
		Und	controlled	Exposure/Gene	ral Populat	ion									averag	ed over 1 g	ram				

Table 11-13 NR Band n5 Head SAR

										<u> </u>		ioaa	O/ 11 1									
										MEASU	REMENT F	RESULTS										
F	REQUENCY		Mode	Bandwidth	Maximum Allowed	Conducted	Antenna	Power Drift	MPR [dB]	Side	Test Position	Tune State	Waveform	Modulation	RB Size	RB Offset	Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power [dBm]	Power [dBm]	Config	[dB]									Number		(W/kg)	Factor	(W/kg)	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	Α	0.00	0	Right	Cheek	112	DFT-S-OFDM	QPSK	1	53	0835M	1:1	0.198	1.109	0.220	A13
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	Α	-0.02	0	Right	Cheek	112	DFT-S-OFDM	QPSK	50	28	0835M	1:1	0.188	1.122	0.211	
836.50	167300	Mid	NR Band n5 (Cell)	20	22.5	22.48	А	0.01	1.5	Right	Cheek	112	CP-OFDM	QPSK	1	1	0835M	1:1	0.153	1.005	0.154	
836.50										Right	Tilt	112	DFT-S-OFDM	QPSK	1	53	0835M	1:1	0.121	1.109	0.134	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	Α	0.00	0	Right	Tilt	112	DFT-S-OFDM	QPSK	50	28	0835M	1:1	0.120	1.122	0.135	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	Α	0.00	0	Left	Cheek	112	DFT-S-OFDM	QPSK	1	53	0835M	1:1	0.148	1.109	0.164	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	A	-0.04	0	Left	Cheek	112	DFT-S-OFDM	QPSK	50	28	0835M	1:1	0.180	1.122	0.202	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	Α	-0.02	0	Left	Tilt	112	DFT-S-OFDM	QPSK	1	53	0835M	1:1	0.117	1.109	0.130	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	Α	0.08	0	Left	Tilt	112	DFT-S-OFDM	QPSK	50	28	0835M	1:1	0.117	1.122	0.131	
				Spatia											1.6 W/I	lead kg (mW/g)						
			Uncontrol	led Exposur	re/General P	opulation				ı					averaged	over 1 gram						

				Approved by:
FCC ID: A3LSMS901E	Proud to be part of @ element	SAR EVALUATION REPORT	SAMSUNG	Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 71 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page / For 10/
021 PCTEST.				REV 21.4 M

Table 11-14 NR Band n66 Head SAR

	IN Ballu 1100 Fleau SAN																						
	MEASUREMENT RESULTS																						
FR	REQUENCY		Made	Mode	Bandwidth	Maximum Allowed	Conducted	Antenna	Power Drift	MPR [dB]	Side	Test Position	Tune State	Waveform	Modulation	RB Size	RB Offset	Serial	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	Ch.		mode	[MHz]	Power [dBm]	Power [dBm]	Config	[dB]	iiii k (ub)	Oide	102102	Tune Olate	Wateronn	modulation	ND OILE	ND OHILL	Number	buty cycle	(W/kg)	Factor	(W/kg)	1.0.7	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	A	-0.07	0	Right	Cheek	55	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.147	1.216	0.179	ı	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	А	-0.06	0	Right	Cheek	55	DFT-S-OFDM	QPSK	50	28	0858M	1:1	0.144	1.250	0.180	ı	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	А	0.13	0	Right	Tilt	26	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.084	1.216	0.102		
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	Α	-0.10	0	Right	Tilt	26	DFT-S-OFDM	QPSK	50	28	0858M	1:1	0.083	1.250	0.104		
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	А	0.07	0	Left	Cheek	26	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.232	1.216	0.282		
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	А	0.06	0	Left	Cheek	26	DFT-S-OFDM	QPSK	50	28	0858M	1:1	0.244	1.250	0.305		
1770.00	354000	High	NR Band n66 (AWS)	20	23.5	22.45	А	0.01	1.5	Left	Cheek	26	CP-OFDM	QPSK	1	1	0858M	1:1	0.166	1.274	0.211		
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	Α	-0.09	0	Left	Tilt	52	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.079	1.216	0.096		
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	Α	0.00	0	Left	Tilt	52	DFT-S-OFDM	QPSK	50	28	0858M	1:1	0.077	1.250	0.096		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.64	F	0.02	0	Right	Cheek	N/A	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.264	1.086	0.287		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.61	F	0.03	0	Right	Cheek	N/A	DFT-S-OFDM	QPSK	50	56	0858M	1:1	0.295	1.094	0.323		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.64	F	-0.01	0	Right	Tilt	N/A	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.546	1.086	0.593		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.61	F	0.06	0	Right	Tilt	N/A	DFT-S-OFDM	QPSK	50	56	0858M	1:1	0.563	1.094	0.616		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.64	F	-0.03	0	Left	Cheek	N/A	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.553	1.086	0.601		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.61	F	0.06	0	Left	Cheek	N/A	DFT-S-OFDM	QPSK	50	56	0858M	1:1	0.531	1.094	0.581		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.64	F	0.04	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	1	104	0858M	1:1	0.680	1.086	0.738		
1720.00	344000	Low	NR Band n66 (AWS)	20	19.0	18.21	F	0.02	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	50	56	0858M	1:1	0.743	1.199	0.891		
1745.00	349000	Mid	NR Band n66 (AWS)	20	19.0	18.26	F	0.06	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	50	56	0858M	1:1	0.763	1.186	0.905		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.61	F	0.03	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	50	56	0858M	1:1	0.715	1.094	0.782		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.52	F	0.06	0	Left	Tilt	N/A	DFT-S-OFDM	QPSK	100	0	0858M	1:1	0.788	1.117	0.880		
1770.00	354000	High	NR Band n66 (AWS)	20	19.0	18.59	F	0.02	0	Left	Tilt	N/A	CP-OFDM	QPSK	1	1	0858M	1:1	0.820	1.099	0.901	A14	
			ANSI / IEEE	C95.1 1992		IMIT				Head													
	Spatial Peak Uncontrolled Exposure/General Population						1.6 W/kg (mW/g) averaged over 1 gram																
	Uncontrolled Exposure/General Population													ruguu	r grun								

Table 11-15 DTS Head SISO SAR

	DIO NEGO SIGO SAN																		
	MEASUREMENT RESULTS																		
FREQU	ENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial	Data Rate	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			[MHZ]	Power [dBm]	Power [dBm]	Drift (dB)		Position	Config.	Number	(Mbps)	(Mbps) (%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11b	DSSS	22	15.0	14.44	-0.04	Right	Cheek	2	0080M	1	98.9	0.095	-	1.138	1.011	-	
2412	1	802.11b	DSSS	22	15.0	14.44	0.03	Right	Tilt	2	0080M	1	98.9	0.173	0.134	1.138	1.011	0.154	
2412	1	802.11b	DSSS	22	15.0	14.44	0.16	Left	Cheek	2	0080M	1	98.9	0.072	-	1.138	1.011	-	
2412	1	802.11b	DSSS	22	15.0	14.44	0.03 Left Tilt 2 0080M 1 98.9 0.122 - 1.138 1.011 -												
ANSI / IEEE C95.1 1992 - SAFETY LIMIT							Head												
	Spatial Peak							1.6 W/kg (mW/g)											
Uncontrolled Exposure/General Population							averaged over 1 gram												

Table 11-16 DTS Head MIMO SAR

	5 10 110 aa 1111110 07 111																				
	MEASUREMENT RESULTS																				
FREQUI	ENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power	Conducted Power (Ant 1)	Maximum Allowed Power	Conducted Power (Ant 2)	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial		Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			(2)	(Ant 1) [dBm]	[dBm]	(Ant 2) [dBm]	[dBm]	Dinit [UD]		. oation	comig.	Number	(Mbps)	(/4)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11n	OFDM	20	15.0	14.29	15.0	14.12	0.01	Right	Cheek	MIMO	0065M	13	91.3	0.443	0.364	1.225	1.095	0.488	A15
2412	1	802.11n	OFDM	20	15.0	14.29	15.0	14.12	-0.01	Right	Tilt	MIMO	0065M	13	91.3	0.206	0.155	1.225	1.095	0.208	
2412	1	802.11n	OFDM	20	15.0	14.29	15.0	14.12	0.00	Left	Cheek	MIMO	0065M	13	91.3	0.182		1.225	1.095		
2412	1	802.11n	OFDM	20	15.0	14.29	15.0	14.12	0.01	Left	Tilt	MIMO	0065M	13	91.3	0.121	0.097	1.225	1.095	0.130	
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Head											
	Spatial Peak						1.6 W/kg (mW/g)														
	Uncontrolled Exposure/General Population								averaged over 1 gram												

Note: To achieve the 18.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 15.0 dBm.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager		
Document S/N:	Test Dates:	DUT Type:		Dogo 72 of 107		
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 72 of 107		

© 2021 PCTEST. REV 21.4 M

Table 11-17 NII SISO Head SAR

							1.4		JO 11	eau s	'/\I\								
								MEASU	IREMEN	T RESUL	TS								
FREQUI	ENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial	Data Rate	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			[MHZ]	Power [dBm]	Fower [dbiii]	Driit [ub]		POSITION	Comig.	Number	(Mbps)	(70)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
5290	58	802.11ac	OFDM	80	10.0	9.56	-0.06	Right	Cheek	1	0080M	29.3	92.4	0.409	0.398	1.107	1.082	0.477	A16
5290	58	802.11ac	OFDM	80	10.0	9.56	0.02	Right	Tilt	1	0080M	29.3	92.4	0.085	-	1.107	1.082	-	
5290	58	802.11ac	OFDM	80	10.0	9.56	0.01	Left	Cheek	1	0080M	29.3	92.4	0.346	0.211	1.107	1.082	0.253	
5290	58	802.11ac	OFDM	80	10.0	9.56	-0.04	Left	Tilt	1	0080M	29.3	92.4	0.052	0.031	1.107	1.082	0.037	
5690	138	802.11ac	OFDM	80	10.0	9.21	-0.01	Right	Cheek	1	0080M	29.3	92.4	0.420	0.339	1.199	1.082	0.440	
5690	138	802.11ac	OFDM	80	10.0	9.21	0.00	Right	Tilt	1	0080M	29.3	92.4	0.041	-	1.199	1.082	-	
5690	138	802.11ac	OFDM	80	9.21	0.00	Left	Cheek	1	0080M	29.3	92.4	0.265	0.167	1.199	1.082	0.217		
5690	138	802.11ac	OFDM	80	10.0	9.21	0.00	Left	Tilt	1	0080M	29.3	92.4	0.030	0.019	1.199	1.082	0.025	
5775	155	802.11ac	OFDM	80	10.0	9.43	-0.08	Right	Cheek	1	0080M	29.3	92.4	0.443	0.317	1.140	1.082	0.391	
5775	155	802.11ac	OFDM	80	10.0	9.43	0.01	Right	Tilt	1	0080M	29.3	92.4	0.045	-	1.140	1.082	-	
5775	155	802.11ac	OFDM	80	10.0	9.43	0.02	Left	Cheek	1	0080M	29.3	92.4	0.140	-	1.140	1.082	-	
5775	155	802.11ac	OFDM	80	10.0	9.43	0.10	Left	Tilt	1	0080M	29.3	92.4	0.018	0.010	1.140	1.082	0.012	
5855	171	802.11ac	OFDM	80	10.0	9.32	0.01	Right	Cheek	1	0409M	29.3	92.4	0.446	0.297	1.169	1.082	0.376	
5855	171	802.11ac	OFDM	80	10.0	9.32	0.02	Right	Tilt	1	0409M	29.3	92.4	0.039	-	1.169	1.082	-	
5855	171	802.11ac	0.03	Left	Cheek	1	0409M	29.3	92.4	0.093	-	1.169	1.082	-					
5855	171	802.11ac	OFDM	80	10.0	9.32	0.02	Left	Tilt	1	0409M	29.3	92.4	0.029	0.024	1.169	1.082	0.030	
		ANSI / I	EEE C95.1 19		YLIMIT								•	Head			•		
		Uncontro	Spatial lled Exposure		opulation									I.6 W/kg (mV eraged over 1	-				
					•														

Table 11-18 NII MIMO Head SAR

								MEASU	REMEN	T RESI	JLTS										
FREQU	ENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power	Conducted Power (Ant 1) [dBm]	Maximum Allowed Power	Conducted Power (Ant 2) [dBm]	Power Drift [dB]	Side	Test Position	Antenna Config.	Device Serial	Data Rate	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			[2]	(Ant 1) [dBm]	(Aut. 1) [abili]	(Ant 2) [dBm]	(All 2) [dblil]	Dink [dD]		rosition	comig.	Number	(Mbps)	(79	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
5290	58	802.11ac	OFDM	80	10.0	9.56	10.0	9.37	-0.02	Right	Cheek	MIMO	0080M	58.5	91.7	0.354	0.333	1.156	1.091	0.420	
5290	58	802.11ac	OFDM	80	10.0	9.56	10.0	9.37	0.00	Right	Tilt	MIMO	0080M	58.5	91.7	0.064		1.156	1.091	-	
5290	58	802.11ac	OFDM	80	10.0	9.56	10.0	9.37	-0.07	Left	Cheek	MIMO	0080M	58.5	91.7	0.207	0.136	1.156	1.091	0.172	
5290	58	802.11ac	OFDM	80	10.0	9.56	10.0	9.37	0.00	Left	Tilt	MIMO	0080M	58.5	91.7	0.052	0.031	1.156	1.091	0.039	
5610	122	802.11ac	OFDM	80	10.0	8.97	10.0	9.20	-0.01	Right	Cheek	MIMO	0080M	58.5	91.7	0.414	0.372	1.268	1.091	0.515	
5610	122	802.11ac	OFDM	80	10.0	8.97	10.0	9.20	0.00	Right	Tilt	MIMO	0080M	58.5	91.7	0.045	-	1.268	1.091	-	
5610	122	802.11ac	OFDM	80	10.0	8.97	10.0	9.20	-0.15	Left	Cheek	MIMO	0080M	58.5	91.7	0.157	0.134	1.268	1.091	0.185	
5610	122	802.11ac	OFDM	80	10.0	8.97	10.0	9.20	0.00	Left	Tilt	MIMO	0080M	58.5	91.7	0.030	0.021	1.268	1.091	0.029	
5775	155	802.11ac	OFDM	80	10.0	9.43	10.0	9.23	0.02	Right	Cheek	MIMO	0080M	58.5	91.7	0.384	0.305	1.194	1.091	0.397	
5775	155	802.11ac	OFDM	80	10.0	9.43	10.0	9.23	0.00	Right	Tilt	MIMO	0080M	58.5	91.7	0.031		1.194	1.091	-	
5775	155	802.11ac	OFDM	80	10.0	9.43	10.0	9.23	0.00	Left	Cheek	MIMO	0080M	58.5	91.7	0.134	-	1.194	1.091	-	
5775	155	802.11ac	OFDM	80	10.0	9.43	10.0	9.23	0.00	Left	Tilt	MIMO	0080M	58.5	91.7	0.016	0.008	1.194	1.091	0.010	
5855	171	802.11ac	OFDM	80	10.0	9.32	10.0	9.18	0.10	Right	Cheek	MIMO	0409M	58.5	91.7	0.207	0.149	1.208	1.091	0.196	
5855	171	802.11ac	OFDM	80	10.0	9.32	10.0	9.18	0.00	Right	Tilt	MIMO	0409M	58.5	91.7	0.112		1.208	1.091	-	
5855	171	802.11ac	OFDM	80	10.0	9.32	10.0	9.18	0.00	Left	Cheek	MIMO	0409M	58.5	91.7	0.106		1.208	1.091	-	
5855	171	802.11ac	OFDM	80	10.0	9.32	10.0	9.18	-0.20	Left	Tilt	MIMO	0409M	58.5	91.7	0.110	0.030	1.208	1.091	0.040	
			AN		95.1 1992 - SAF	ETY LIMIT										Head			•		
			Una		Spatial Peak	I Population										I.6 W/kg (mW eraged over 1	-				

Note: To achieve the 13.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 10 dBm.

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 72 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 73 of 107

© 2021 PCTEST. REV 21.4 M

Table 11-19 DSS Head SAR

							<u> </u>	cau o	<i>~</i> 11 <i>~</i>							
						MEAS	SUREM	ENT RE	SULTS							
FREQUE	NCY	Mode	Service	Maximum Allowed	Conducted	Power	Side	Test	Device Serial	Data Rate	Duty Cycle	SAR (1g)	Scaling Factor (Cond	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			Power [dBm]	Power [dBm]	Drift [dB]		Position	Number	(Mbps)	(%)	(W/kg)	Power)	Cycle)	(W/kg)	
2441.00	39	Bluetooth	FHSS	13.0	12.53	-0.04	Right	Cheek	0065M	1	77.60	0.161	1.114	1.289	0.231	A17
2441.00	39	Bluetooth	FHSS	13.0	12.53	-0.05	Right	Tilt	0065M	1	77.60	0.033	1.114	1.289	0.047	
2441.00	39	Bluetooth	FHSS	13.0	12.53	0.00	Left	Cheek	0065M	1	77.60	0.073	1.114	1.289	0.105	
2441.00	39	Bluetooth	FHSS	13.0	12.53	-0.04	Left	Tilt	0065M	1	77.60	0.015	1.114	1.289	0.022	
		ANSI / IEEE C	C95.1 1992 - S	AFETY LIMIT	7							Head				
			Spatial Peak								1.	6 W/kg (mW	//g)			
		Uncontrolled E	xposure/Gen	eral Populati	on						avei	raged over 1	gram			

11.2 Standalone Body-Worn SAR Data

Table 11-20 GSM/UMTS Body-Worn SAR Data

						MEAS	UREME	NT RES	SULTS							
FREQU	ENCY	Mode	Service	Maximum Allowed	Conducted	Tune State	Power Drift [dB]	Spacing	Antenna	Device Serial	Duty Cycle	Side	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	Ch.			Power [dBm]	Power [dBm]	State	υτιπ (αΒ)		Config.	Number			(W/kg)	Factor	(W/kg)	
836.60	190	GSM 850	GSM	33.0	31.92	N/A	-0.07	15 mm	Α	0412M	1:8.3	back	0.237	1.282	0.304	A18
1850.20	512	GSM 1900	GSM	30.0	29.36	N/A	0.01	15 mm	Α	0866M	1:8.3	back	0.272	1.159	0.315	A20
836.60	4183	UMTS 850	RMC	25.5	24.13	112	-0.02	15 mm	Α	0412M	1:1	back	0.410	1.371	0.562	A22
1712.40	1312	UMTS 1750	RMC	24.0	23.30	26	0.00	15 mm	Α	0827M	1:1	back	0.641	1.175	0.753	
1732.40	1412	UMTS 1750	RMC	24.0	23.38	26	-0.04	15 mm	Α	0827M	1:1	back	0.655	1.153	0.755	A24
1752.60	1513	UMTS 1750	RMC	24.0	23.42	26	-0.02	15 mm	Α	0827M	1:1	back	0.572	1.143	0.654	
1852.40	9262	UMTS 1900	RMC	24.7	23.70	17	0.01	15 mm	Α	0861M	1:1	back	0.572	1.259	0.720	A26
		ANSI / IE	EE C95.1 199	2 - SAFETY	LIMIT							Вс	ody			
			Spatial F	Peak								1.6 W/kg	g (mW/g)			
		Uncontroll	led Exposure	General Pop	ulation						a۱	eraged o	over 1 gram			

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 74 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 74 of 107

Table 11-21 LTE Body-Worn SAR

									MEASUR	EMENT I	RESULTS										
FF	REQUENCY	r	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RR Offent	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	С	h.	Mode	[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]	MIF IX [GD]	Config.	Number	Modulation	KB 3126	KB Ollset	Spacing	Side	Duty Cycle	(W/kg)	Factor	(W/kg)	riot#
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	-0.04	0	Α	0412M	QPSK	1	0	15 mm	back	1:1	0.173	1.028	0.178	A28
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	0.02	1	А	0412M	QPSK	25	25	15 mm	back	1:1	0.156	1.038	0.162	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	-0.05	0	Α	0412M	QPSK	1	25	15 mm	back	1:1	0.292	1.019	0.298	A30
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	-0.01	1	А	0412M	QPSK	25	12	15 mm	back	1:1	0.228	1.023	0.233	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	112	0.07	0	А	A 0412M QPSK 1 36 15 mm back 1:1 0.262 1.059 0.277										A32
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	112	-0.02	1	А	A 0412M QPSK 36 0 15 mm back 1:1 0.200 1.057									0.211	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	114	-0.05	0	А	0831M	QPSK	1	0	15 mm	back	1:1	0.590	1.000	0.590	A34
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	114	-0.01	1	Α	0831M	QPSK	50	25	15 mm	back	1:1	0.463	1.014	0.469	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	22.0	20.50	N/A	-0.05	0	F	1092M	QPSK	1	50	15 mm	back	1:1	0.166	1.413	0.235	A36
1732.50	20175	Mid	LTE Band 4 (AWS)	20	21.0	19.45	N/A	0.01	1	F	1092M	QPSK	50	25	15 mm	back	1:1	0.132	1.429	0.189	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	20	-0.02	0	Α	0831M QPSK 1 0 15 mm back 1:1 0.475 1.000										A38
1860.00 26140 Low LTE Band 25 (PCS) 20 22.5 22.39 20 -0.02 1												QPSK	50	0	15 mm	back	1:1	0.357	1.026	0.366	
			ANSI		.1 1992 - SA	FETY LIMIT							•	•		Во	-			•	
			Harrie		atial Peak	al Population										1.6 W/kg	ı (mW/g) ver 1 gram				

Table 11-22 LTE Band 41 Body-Worn SAR

							. – – u			,,,,		0,									
								MEASU	JREMEN	T RESUL	TS										
Power Class	F	REQUENC	Y	Mode	Bandwidth [MHz]	Maximum Allowed	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Antenna Config.	Device Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
	MHz Ch. [mriz] Power (dBm)										Number				.,			(W/kg)	Factor	(W/kg)	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	0.04	0	В	0831M	QPSK	1	0	15 mm	back	1:1.58	0.181	1.067	0.193	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	0.01	1	В	0831M	QPSK	50	50	15 mm	back	1:1.58	0.140	1.079	0.151	
Power Class 2	Power Class 2 2549.50 40185 Low-Mid LTE Band 41 20 26.5 26.31									В	0831M	QPSK	1	0	15 mm	back	1:2.31	0.186	1.045	0.194	A40
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT													•	Bod	у					
			S	patial Peak							1.	6 W/kg (mW/g)								
		Uncontr	olled Exp	osure/General P							ave	raged ove	er 1 gram	1							

Table 11-23 NR Body-Worn SAR

									1417	Dou	,		1 \									
										MEASURE	EMENT RE	SULTS										
F	REQUENCY		Mode	Bandwidth	Maximum Allowed	Conducted	Antenna	Power Drift	MPR (dB)	Tune State	Serial	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power [dBm]	Power [dBm]	Config	[dB]	[]		Number							, -,	(W/kg)	Factor	(W/kg)	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	Α	0.05	0	112	0858M	DFT-S-OFDM	QPSK	1	53	15 mm	back	1:1	0.274	1.109	0.304	A42
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	А	0.03	0	112	0858M	DFT-S-OFDM	QPSK	50	28	15 mm	back	1:1	0.270	1.122	0.303	
836.50	167300	Mid	NR Band n5 (Cell)	20	22.5	22.48	A	0.00	1.5	112	0858M	CP-OFDM	QPSK	1	1	15 mm	back	1:1	0.244	1.005	0.245	
1720.00	344000	Low	NR Band n66 (AWS)	20	25.0	23.79	А	0.03	0	26	1092M	DFT-S-OFDM	QPSK	1	104	15 mm	back	1:1	0.659	1.321	0.871	
1745.00	349000	Mid	NR Band n66 (AWS)	20	25.0	24.11	А	-0.12	0	114	1092M	DFT-S-OFDM	QPSK	1	104	15 mm	back	1:1	0.666	1.227	0.817	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	А	0.01	0	114	114 1092M DFT-S-OFDM QPSK 1 104 15 mm back 1:1 0.759 1.216										0.923	A44
1720.00	344000	Low	NR Band n66 (AWS)	20	25.0	23.67	А	0.07	0	26	1092M	DFT-S-OFDM	QPSK	50	28	15 mm	back	1:1	0.623	1.358	0.846	
1745.00	349000	Mid	NR Band n66 (AWS)	20	25.0	24.01	А	0.02	0	114	1092M	DFT-S-OFDM	QPSK	50	28	15 mm	back	1:1	0.647	1.256	0.813	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	А	-0.02	0	114	1092M	DFT-S-OFDM	QPSK	50	28	15 mm	back	1:1	0.734	1.250	0.918	
1770.00	354000	High	NR Band n66 (AWS)	20	24.0	23.01	А	0.04	1	114	1092M	DFT-S-OFDM	QPSK	100	0	15 mm	back	1:1	0.700	1.256	0.879	
1770.00	354000	High	NR Band n66 (AWS)	20	23.5	22.45	А	-0.04	1.5	114	1092M	CP-OFDM	QPSK	1	1	15 mm	back	1:1	0.607	1.274	0.773	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.90	F	0.01	0	N/A	0858M	DFT-S-OFDM	QPSK	1	1	15 mm	back	1:1	0.195	1.288	0.251	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.88	F	0.04	0	N/A	0858M	DFT-S-OFDM	QPSK	50	28	15 mm	back	1:1	0.184	1.294	0.238	
1720.00	344000	Low	NR Band n66 (AWS)	20	21.5	21.20	F	0.01	1.5	N/A	0858M	CP-OFDM	QPSK	1	1	15 mm	back	1:1	0.180	1.072	0.193	
			AN			AFETY LIMI	i e							•		Body		•				
					Spatial Peak											1.6 W/kg (m						
		Spatial Feak Uncontrolled Exposure/General Population													a۱	eraged over	1 gram					

FCC ID: A3LSMS901E	PCTEST*	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Da 75 at 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 75 of 107
21 PCTEST.				REV 21.4 M

Table 11-24 DTS SISO Body-Worn SAR

									,		• • • •								
							ı	MEASU	REMENT	RESUL	.TS								
FREQU	ENCY	Mode	Service	Bandwidth [MHz]		Conducted	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.		Power [dBm]	Drift [dB]	.,	Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)				
2412	1	802.11b	DSSS	22	19.0	18.55	-0.03	15 mm	2	0065M	1	back	98.9	0.163	0.130	1.109	1.011	0.146	
		ANSI / I	•			•				Body		•							
			Spatial	Peak										1.6 W/kg (m\	N/g)				
		Uncontro							a١	eraged over '	l gram								

Table 11-25

DTS Body-worn SISO SAR during conditions with 5 GHz WLAN and/or 5G NR

				<i>,</i>															
							ı	MEASU	REMENT	RESUL	.TS								
FREQ	JENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed	Conducted	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			Drift [dB]	.,	Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)				
2412	1	802.11b	DSSS	22	15.0	14.44	0.01	15 mm	2	1603M	1	back	98.9	0.088	0.065	1.138	1.011	0.075	
	•	ANSI / I								Body									
			Spatial		ĺ						1.6 W/kg (m\	N/g)							
		Uncontro	lled Exposure	e/General P	opulation								av	eraged over '	l gram				

Note: 2.4 GHz SISO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI or 5G NR was not transmitting during the above evaluations.

Table 11-26 DTS MIMO Body-Worn SAR

								ME	ASURE	MENT F	RESULTS	;									
FREQL	JENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted Power (Ant 1)	Maximum Allowed	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power (Ant 1) [dBm]	[dBm]	[dBm]	[dBm]	Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11b	-0.01	15 mm	MIMO	1603M	1	back	99.1	0.240	0.200	1.109	1.009	0.224	A46						
										Body											
				Spatia	al Peak											1.6 W/kg (m	W/g)				
			Uncontrol	ed Exposu	re/General P	opulation									а	veraged over	1 gram				

Note: To achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm.

Table 11-27 DTS Body-worn MIMO SAR during conditions with 5 GHz WLAN and/or 5G NR

								ME	ASURE	MENT F	RESULTS	;									
FREQU	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted Power (Ant 1)	Maximum Allowed Power (Ant 2)	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power (Ant 1) [dBm]	[dBm]	Power (Ant 2) [dBm]	[dBm]	Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11n	-0.01	15 mm	MIMO	0065M	13	back	91.3	0.105	0.083	1.225	1.095	0.111							
										Body											
				Spatia	al Peak											1.6 W/kg (m	N/g)				
			Uncontrol	led Exposu	re/General P	opulation									a	veraged over	1 gram				

Note: 2.4 GHz MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI or 5G NR was not transmitting during the above evaluations.

FCC ID: A3LSMS901E	Proud to be part of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Daga 70 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 76 of 107

Table 11-28 NII SISO Body-Worn SAR

							MEA	ASURE	MENT RE	SULTS									
FREQU	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			[MHz]	Power [dBm]	Power [dBm]	Drift [dB]	.,	Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
5290	58	802.11ac	OFDM	80	18.0	17.73	0.03	15 mm	1	1789M	29.3	back	92.4	0.216	0.164	1.064	1.082	0.189	
5690	138	802.11ac	OFDM	80	18.0	17.86	-0.11	15 mm	1	1789M	29.3	back	92.4	0.108	0.092	1.033	1.082	0.103	
5775	155	802.11ac	OFDM	80	18.0	17.92	-0.11	15 mm	1	1789M	29.3	back	92.4	0.075	0.062	1.019	1.082	0.068	
5855	171	802.11ac	OFDM	80	18.0	17.42	-0.04	15 mm	1	0080M	29.3	back	92.4	0.130	0.100	1.143	1.082	0.124	
		ANSI / II	EEE C95.1 19		YLIMIT									Body					
			Spatial											1.6 W/kg (m\	•				
		Uncontro	lled Exposure	e/General P	opulation								av	eraged over '	gram				

Table 11-29 NII MIMO Body-Worn SAR

								ME	ASURE	MENT R	RESULTS	;									
FREQU	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted Power (Ant 1)	Maximum Allowed	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power (Ant 1) [dBm]	[dBm]	Power (Ant 2) [dBm]	[dBm]	Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
5290	58	802.11ac	OFDM	80	18.0	17.73	18.0	17.39	-0.14	15 mm	MIMO	1789M	58.5	back	91.7	0.243	0.180	1.151	1.091	0.226	
5690	138	802.11ac	OFDM	80	18.0	17.86	18.0	17.39	0.08	15 mm	MIMO	1789M	58.5	back	91.7	0.164	0.111	1.151	1.091	0.139	
5775	155	802.11ac	OFDM	80	18.0	17.92	18.0	17.52	0.16	15 mm	MIMO	1789M	58.5	back	91.7	0.143	0.107	1.117	1.091	0.130	
5855	171	802.11ac	OFDM	0.01	15 mm	MIMO	M0800	58.5	back	91.7	0.267	0.220	1.143	1.091	0.274	A48					
										Body											
				Spatia												1.6 W/kg (m	W/g)				
			Uncontrol	led Exposu	re/General P	opulation									av	eraged over	1 gram				

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

Table 11-30 NII Body-worn MIMO SAR during Conditions with 2.4 GHz WLAN and/or 5G NR

								ME	ASURE	MENT F	RESULTS	3									
FREQU	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted Power (Ant 1) [dBm]	Maximum Allowed	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power (Ant 1) [dBm]	[dBm]	Power (Ant 2) [dBm]	[dBm]	Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
5290	58	802.11ac	OFDM	80	13.0	12.01	13.0	12.07	-0.21	15 mm	MIMO	0080M	58.5	back	91.7	0.113	0.069	1.256	1.091	0.095	
5610	122	802.11ac	OFDM	80	13.0	12.23	13.0	12.34	-0.04	15 mm	MIMO	0080M	58.5	back	91.7	0.102	0.070	1.194	1.091	0.091	
5775	155	802.11ac	OFDM	80	13.0	12.06	13.0	11.87	-0.03	15 mm	MIMO	0080M	58.5	back	91.7	0.103	0.067	1.297	1.091	0.095	
5855	171	802.11ac	OFDM	80	13.0	11.93	13.0	12.02	0.02	15 mm	MIMO	0080M	58.5	back	91.7	0.081	0.063	1.279	1.091	0.088	
			ANSI / IE	EE C95.1 1	992 - SAFET	Y LIMIT										Body					
				Spatia	al Peak											1.6 W/kg (m	W/g)				
			Uncontrol	led Exposu	re/General P	opulation									av	veraged over	1 gram				

Note: NII MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 2.4 GHz WIFI or 5G NR was not transmitting during the above evaluations.

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 77 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 77 of 107

Table 11-31 DSS Body-Worn SAR

									•	<u> </u>						
						MEAS	UREMI	ENT RE	SULTS	;						
FREQUE	ENCY	Mode	Service	Maximum Allowed	Conducted	Power	Spacing	Device Serial	Data Rate	Side	Duty Cycle	SAR (1g)	Scaling Factor (Cond	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			Power [dBm]	Power [dBm]	Drift [dB]		Number	(Mbps)		(%)	(W/kg)	Power)	Cycle)	(W/kg)	
2402	0	Bluetooth	FHSS	16.0	15.56	0.06	15 mm	0080M	1	back	77.6	0.045	1.107	1.289	0.064	A50
		ANSI / IEEE C	C95.1 1992 - S	AFETY LIMIT								Body		•		
			Spatial Peak								1	.6 W/kg (m\	N/g)			
		Uncontrolled E	xposure/Gen	eral Populati	on						ave	eraged over 1	gram			

11.3 Standalone Hotspot SAR Data

Table 11-32 GPRS Hotspot SAR Data

MHz Ch. Power [dBm] Prover [dBm] Drift [dB] Volumber Slots Volumber Slots Volumber Wildler (W/kg) Factor Quite State Description Action Action<									ENT RES		-						
MHz Ch. Power (atlan) Number (atlan) Number Stoll W(M/kg) Factor (W/kg) 824.20 128 GSM850 GPRS 30.5 29.53 -0.05 10 mm A 0412M 3 1:2.76 back 0.522 1.250 0.663 848.80 190 GSM850 GPRS 30.5 29.58 0.01 10 mm A 0412M 3 1:2.76 back 0.541 1.236 0.669 848.80 251 GSM850 GPRS 30.5 29.60 -0.04 10 mm A 0412M 3 1:2.76 back 0.638 1.230 0.785 / 848.80 251 GSM850 GPRS 30.5 29.60 -0.03 10 mm A 0412M 3 1:2.76 bottom 0.417 1.230 0.513 848.80 251 GSM850 GPRS 30.5 29.60 0.01 10 mm A 0412M 3 1:2.76 <th>FREQUE</th> <th>ENCY</th> <th>Mode</th> <th>Service</th> <th></th> <th></th> <th></th> <th>Spacing</th> <th></th> <th></th> <th></th> <th>Duty Cycle</th> <th>Side</th> <th>SAR (1g)</th> <th></th> <th></th> <th>Plot #</th>	FREQUE	ENCY	Mode	Service				Spacing				Duty Cycle	Side	SAR (1g)			Plot #
836.60 190 GSM850 GPRS 30.5 29.58 0.01 10 mm A 0412M 3 1:2.76 back 0.541 1.236 0.669 848.80 251 GSM850 GPRS 30.5 29.60 -0.04 10 mm A 0412M 3 1:2.76 back 0.638 1.230 0.785 / 848.80 251 GSM850 GPRS 30.5 29.60 -0.03 10 mm A 0412M 3 1:2.76 front 0.417 1.230 0.513 848.80 251 GSM850 GPRS 30.5 29.60 0.04 10 mm A 0412M 3 1:2.76 bottom 0.192 1.230 0.236 848.80 251 GSM850 GPRS 30.5 29.60 0.01 10 mm A 0412M 3 1:2.76 front 0.447 1.230 0.576 848.80 251 GSM850 GPRS 30.5 29.60 0.01 10 mm A 0412M 3 1:2.76 front 0.468 1.230 0.576 848.80 251 GSM850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 front 0.468 1.230 0.576 848.80 251 GSM850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 left 0.232 1.230 0.285 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.01 10 mm A 0866M 3 1:2.76 back 0.404 1.045 0.422 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.04 10 mm A 0866M 3 1:2.76 front 0.397 1.045 0.415 1850.20 512 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.045 0.034 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612	MHz	Ch.			Power [dBm]	Power (abm)	υτιπ (αΒ)		Config.	Number	Siots			(W/kg)	Factor	(W/kg)	
848.80 251 GSM850 GPRS 30.5 29.60 -0.04 10 mm A 0412M 3 1:2.76 back 0.638 1.230 0.785 // 848.80 251 GSM850 GPRS 30.5 29.60 -0.03 10 mm A 0412M 3 1:2.76 front 0.417 1.230 0.513 848.80 251 GSM850 GPRS 30.5 29.60 0.04 10 mm A 0412M 3 1:2.76 bottom 0.192 1.230 0.236 848.80 251 GSM850 GPRS 30.5 29.60 0.01 10 mm A 0412M 3 1:2.76 right 0.468 1.230 0.576 848.80 251 GSM850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 left 0.232 1.230 0.285 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.01 10 mm A 0866M 3 1:2.76 front 0.397 1.045 0.415 1880.00 661 GSM1900 GPRS 25.5 24.96 -0.08 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.563 1.050 0.612 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.563 1.050 0.612 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 right 0.033 1.045 0.034 1880.00 661 GSM1900 GPRS 25.5 25.31 -0.07 10 mm A 0866M 3 1:2.76 left 0.126 1.045 0.034	824.20	128	GSM 850	GPRS	30.5	29.53	-0.05	10 mm	Α	0412M	3	1:2.76	back	0.522	1.250	0.653	
848.80 251 GSM850 GPRS 30.5 29.60 -0.03 10 mm A 0412M 3 1:2.76 front 0.417 1.230 0.513 848.80 251 GSM850 GPRS 30.5 29.60 0.04 10 mm A 0412M 3 1:2.76 bottom 0.192 1.230 0.236 848.80 251 GSM850 GPRS 30.5 29.60 0.01 10 mm A 0412M 3 1:2.76 bottom 0.192 1.230 0.236 848.80 251 GSM850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 left 0.488 1.230 0.576 848.80 251 GSM850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 left 0.232 1.230 0.285 1880.00 661 GSM1900 GPRS 25.5 25.31 <	836.60	190	GSM 850	GPRS	30.5	29.58	0.01	10 mm	Α	0412M	3	1:2.76	back	0.541	1.236	0.669	
848.80 251 GSM 850 GPRS 30.5 29.60 0.04 10 mm A 0412M 3 1:2.76 bottom 0.192 1.230 0.236 848.80 251 GSM 850 GPRS 30.5 29.60 0.01 10 mm A 0412M 3 1:2.76 right 0.468 1.230 0.576 848.80 251 GSM 850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 right 0.468 1.230 0.576 848.80 251 GSM 850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 left 0.232 1.230 0.285 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.01 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM 1900 GPRS 25.5 25.31	848.80	251	GSM 850	GPRS	30.5	29.60	-0.04	10 mm	Α	0412M	3	1:2.76	back	0.638	1.230	0.785	A19
848.80 251 GSM 850 GPRS 30.5 29.60 0.01 10 mm A 0412M 3 1:2.76 right 0.468 1.230 0.576 848.80 251 GSM 850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 left 0.232 1.230 0.285 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.01 10 mm A 0866M 3 1:2.76 back 0.404 1.045 0.422 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.04 10 mm A 0866M 3 1:2.76 front 0.397 1.045 0.415 1850.20 512 GSM 1900 GPRS 25.5 24.96 -0.08 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM 1900 GPRS 25.5 25.31 <td>848.80</td> <td>251</td> <td>GSM 850</td> <td>GPRS</td> <td>30.5</td> <td>29.60</td> <td>-0.03</td> <td>10 mm</td> <td>Α</td> <td>0412M</td> <td>3</td> <td>1:2.76</td> <td>front</td> <td>0.417</td> <td>1.230</td> <td>0.513</td> <td></td>	848.80	251	GSM 850	GPRS	30.5	29.60	-0.03	10 mm	Α	0412M	3	1:2.76	front	0.417	1.230	0.513	
848.80 251 GSM 850 GPRS 30.5 29.60 -0.02 10 mm A 0412M 3 1:2.76 left 0.232 1.230 0.285 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.01 10 mm A 0866M 3 1:2.76 back 0.404 1.045 0.422 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.04 10 mm A 0866M 3 1:2.76 front 0.397 1.045 0.415 1850.20 512 GSM 1900 GPRS 25.5 24.96 -0.08 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.045 0.635 1909.80 810 GSM 1900 GPRS 25.5 25.29 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM 1900 GPRS 25.5 25.31 0.07 10 mm A 0866M 3 1:2.76 left 0.033 1.045 0.034 1880.00 661 GSM 1900 GPRS 25.5 25.31 0.07 10 mm A 0866M 3 1:2.76 left 0.033 1.045 0.034 1880.00 661 GSM 1900 GPRS 25.5 25.31 0.07 10 mm A 0866M 3 1:2.76 left 0.126 1.045 0.132	848.80	251	GSM 850	GPRS	30.5	29.60	0.04	10 mm	А	0412M	3	1:2.76	bottom	0.192	1.230	0.236	
1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.01 10 mm A 0866M 3 1:2.76 back 0.404 1.045 0.422 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.04 10 mm A 0866M 3 1:2.76 front 0.397 1.045 0.415 1850.20 512 GSM 1900 GPRS 25.5 24.96 -0.08 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.608 1.045 0.635 ////////////////////////////////////	848.80	251	GSM 850	GPRS	30.5	29.60	0.01	10 mm	Α	0412M	3	1:2.76	right	0.468	1.230	0.576	
1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.04 10 mm A 0866M 3 1:2.76 front 0.397 1.045 0.415 1850.20 512 GSM 1900 GPRS 25.5 24.96 -0.08 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.608 1.045 0.635 // 1909.80 810 GSM 1900 GPRS 25.5 25.29 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.07 10 mm A 0866M 3 1:2.76 right 0.033 1.045 0.034 1880.00 661 GSM 1900 GPRS 2	848.80	251	GSM 850	GPRS	30.5	29.60	-0.02	10 mm	Α	0412M	3	1:2.76	left	0.232	1.230	0.285	
1850.20 512 GSM 1900 GPRS 25.5 24.96 -0.08 10 mm A 0866M 3 1:2.76 bottom 0.563 1.132 0.637 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.608 1.045 0.635 ////////////////////////////////////	1880.00	661	GSM 1900	GPRS	25.5	25.31	-0.01	10 mm	Α	0866M	3	1:2.76	back	0.404	1.045	0.422	
1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.608 1.045 0.635 // 1909.80 810 GSM 1900 GPRS 25.5 25.29 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM 1900 GPRS 25.5 25.31 0.07 10 mm A 0866M 3 1:2.76 right 0.033 1.045 0.034 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.21 10 mm A 0866M 3 1:2.76 left 0.126 1.045 0.132	1880.00	661	GSM 1900	GPRS	25.5	25.31	-0.04	10 mm	А	0866M	3	1:2.76	front	0.397	1.045	0.415	
1909.80 810 GSM 1900 GPRS 25.5 25.29 -0.05 10 mm A 0866M 3 1:2.76 bottom 0.583 1.050 0.612 1880.00 661 GSM 1900 GPRS 25.5 25.31 0.07 10 mm A 0866M 3 1:2.76 right 0.033 1.045 0.034 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.21 10 mm A 0866M 3 1:2.76 left 0.126 1.045 0.132	1850.20	512	GSM 1900	GPRS	25.5	24.96	-0.08	10 mm	Α	0866M	3	1:2.76	bottom	0.563	1.132	0.637	
1880.00 661 GSM 1900 GPRS 25.5 25.31 0.07 10 mm A 0866M 3 1:2.76 right 0.033 1.045 0.034 1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.21 10 mm A 0866M 3 1:2.76 left 0.126 1.045 0.132	1880.00	661	GSM 1900	GPRS	25.5	25.31	-0.05	10 mm	Α	0866M	3	1:2.76	bottom	0.608	1.045	0.635	A21
1880.00 661 GSM 1900 GPRS 25.5 25.31 -0.21 10 mm A 0866M 3 1:2.76 left 0.126 1.045 0.132	1909.80	810	GSM 1900	GPRS	25.5	25.29	-0.05	10 mm	Α	0866M	3	1:2.76	bottom	0.583	1.050	0.612	
	1880.00	661	GSM 1900	GPRS	25.5	25.31	0.07	10 mm	А	0866M	3	1:2.76	right	0.033	1.045	0.034	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Body	1880.00	661	GSM 1900	GPRS	25.5	25.31	-0.21	10 mm	Α	0866M	3	1:2.76	left	0.126	1.045	0.132	
Spatial Peak 1.6 W/kg (mW/g) Uncontrolled Exposure/General Population averaged over 1 gram				Spatial Peak									/kg (mW				

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 70 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 78 of 107

Table 11-33 UMTS Hotspot SAR Data

						IVIIO	посъј	JUL 3	AR Da	ıa						
						MEA	SUREMI	ENT RE	SULTS							
FREQUI	ENCY	Mode	Service	Maximum Allowed	Conducted Power [dBm]	Tune State	Power Drift [dB]	Spacing	Antenna Config.	Device Serial	Duty Cycle	Side	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot#
MHz	Ch.			Power [dBm]	Fower [dBill]	State	Driit [db]		Coning.	Number			(W/kg)	Pactor	(W/kg)	
826.40	4132	UMTS 850	RMC	25.5	24.00	112	-0.03	10 mm	Α	0412M	1:1	back	0.560	1.413	0.791	
836.60	4183	UMTS 850	RMC	25.5	24.13	112	0.00	10 mm	Α	0412M	1:1	back	0.570	1.371	0.781	
846.60	4233	UMTS 850	RMC	25.5	24.10	112	0.01	10 mm	Α	0412M	1:1	back	0.588	1.380	0.811	A23
836.60	4183	UMTS 850	RMC	25.5	24.13	112	0.00	10 mm	Α	0412M	1:1	front	0.433	1.371	0.594	
836.60	4183	UMTS 850	RMC	25.5	24.13	112	-0.01	10 mm	А	0412M	1:1	bottom	0.195	1.371	0.267	
836.60	4183	UMTS 850	RMC	25.5	24.13	112	0.01	10 mm	А	0412M	1:1	right	0.464	1.371	0.636	
836.60	4183	UMTS 850	RMC	25.5	24.13	112	0.01	10 mm	А	0412M	1:1	left	0.321	1.371	0.440	
1752.60	1513	UMTS 1750	RMC	20.0	19.39	26	-0.04	10 mm	А	0866M	1:1	back	0.383	1.151	0.441	
1752.60	1513	UMTS 1750	RMC	20.0	19.39	26	-0.03	10 mm	А	0866M	1:1	front	0.344	1.151	0.396	
1712.40	1312	UMTS 1750	RMC	20.0	19.27	26	0.00	10 mm	Α	0866M	1:1	bottom	0.665	1.183	0.787	
1732.40	1412	UMTS 1750	RMC	20.0	19.34	26	-0.01	10 mm	А	0866M	1:1	bottom	0.700	1.164	0.815	A25
1752.60	1513	UMTS 1750	RMC	20.0	19.39	26	0.02	10 mm	Α	0866M	1:1	bottom	0.696	1.151	0.801	
1752.60	1513	UMTS 1750	RMC	20.0	19.39	26	0.10	10 mm	Α	0866M	1:1	right	0.046	1.151	0.053	
1752.60	1513	UMTS 1750	RMC	20.0	19.39	26	-0.02	10 mm	А	0866M	1:1	left	0.125	1.151	0.144	
1852.40	9262	UMTS 1900	RMC	20.0	19.55	17	-0.02	10 mm	А	0861M	1:1	back	0.388	1.109	0.430	
1852.40	9262	UMTS 1900	RMC	20.0	19.55	17	-0.01	10 mm	Α	0861M	1:1	front	0.328	1.109	0.364	
1852.40	9262	UMTS 1900	RMC	20.0	19.55	17	0.00	10 mm	А	0861M	1:1	bottom	0.679	1.109	0.753	
1880.00	9400	UMTS 1900	RMC	20.0	19.03	17	0.02	10 mm	Α	0861M	1:1	bottom	0.689	1.250	0.861	A27
1907.60	9538	UMTS 1900	RMC	20.0	19.31	17	0.00	10 mm	А	0861M	1:1	bottom	0.649	1.172	0.761	
1852.40	9262	UMTS 1900	RMC	20.0	19.55	17	0.08	10 mm	А	0861M	1:1	right	0.065	1.109	0.072	
1852.40	9262	UMTS 1900	RMC	20.0	19.55	17	0.02	10 mm	А	0861M	1:1	left	0.305	1.109	0.338	
		ANSI / IE	EEE C95.1 199		LIMIT							Bod	-			
		Umaartus	Spatial I		latia.a							.6 W/kg	,			
		Uncontrol	led Exposure	oenerai Pop	uiation			I			ave	ageu ov	er 1 gram			

Table 11-34 LTE Band 12 Hotspot SAR

									MEASU	REMENT	RESULT	s									
F	REQUENCY	′	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]	()	Config.	Number						, -,	(W/kg)	Factor	(W/kg)	
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	0.01	0	Α	0412M	QPSK	1	0	10 mm	back	1:1	0.248	1.028	0.255	A29
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	-0.04	1	Α	0412M	QPSK	25	25	10 mm	back	1:1	0.227	1.038	0.236	
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	0.08	0	Α	0412M	QPSK	1	0	10 mm	front	1:1	0.177	1.028	0.182	
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	0.01	1	Α	0412M	QPSK	25	25	10 mm	front	1:1	0.162	1.038	0.168		
707.50	23095	Mid	LTE Band 12	10	24.5	0.03	0	А	0412M	QPSK	1	0	10 mm	bottom	1:1	0.068	1.028	0.070			
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	0.03	1	Α	0412M	QPSK	25	25	10 mm	bottom	1:1	0.061	1.038	0.063	
707.50	23095	Mid	LTE Band 12	10	24.5	24.38	104	-0.02	0	А	0412M	QPSK	1	0	10 mm	right	1:1	0.164	1.028	0.169	
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	-0.01	1	Α	0412M	QPSK	25	25	10 mm	right	1:1	0.158	1.038	0.164	
707.50	23095	Mid	LTE Band 12	10	24.5	0.01	0	Α	0412M	QPSK	1	0	10 mm	left	1:1	0.126	1.028	0.130			
707.50	23095	Mid	LTE Band 12	10	23.5	23.34	104	0.04	1	А	0412M	QPSK	25	25	10 mm	left	1:1	0.113	1.038	0.117	
			ANSI / IEEE C								Bod 6 W/kg (raged over	•	ı								

FCC ID: A3LSMS901E	Proud to be post of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 70 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 79 of 107

Table 11-35 LTE Band 13 Hotspot SAR

											о тор	J. O, .									
									MEASU	REMENT	RESULT	S									
FI	REQUENCY	r	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]	[]	Config.	Number						, -,	(W/kg)	Factor	(W/kg)	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	-0.04	0	А	0412M	QPSK	1	25	10 mm	back	1:1	0.399	1.019	0.407	A31
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	0.08	1	Α	0412M	QPSK	25	12	10 mm	back	1:1	0.327	1.023	0.335	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	0.10	0	А	0412M	QPSK	1	25	10 mm	front	1:1	0.327	1.019	0.333	
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	0.02	1	А	0412M	QPSK	25	12	10 mm	front	1:1	0.258	1.023	0.264	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	0.01	0	Α	0412M	QPSK	1	25	10 mm	bottom	1:1	0.125	1.019	0.127	
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	-0.03	1	А	0412M	QPSK	25	12	10 mm	bottom	1:1	0.098	1.023	0.100	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	-0.04	0	Α	0412M	QPSK	1	25	10 mm	right	1:1	0.267	1.019	0.272	
782.00	23230	Mid	LTE Band 13	10	23.5	23.40	104	0.00	1	Α	0412M	QPSK	25	12	10 mm	right	1:1	0.212	1.023	0.217	
782.00	23230	Mid	LTE Band 13	10	24.5	24.42	104	0.00	0	А	0412M	QPSK	1	25	10 mm	left	1:1	0.233	1.019	0.237	
782.00	23230	Mid	LTE Band 13	10	23.5	0.01	1	А	0412M	QPSK	25	12	10 mm	left	1:1	0.183	1.023	0.187			
			ANSI / IEEE C	Spatial Pea	k									Bod 6 W/kg (raged over	•	1					

Table 11-36 LTE Band 26 (Cell) Hotspot SAR

								N		EMENT F	RESULTS	;									
F	REQUENC	Υ	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	c	Ch.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]	(,==,	Config.	Number						,	(W/kg)	Factor	(W/kg)	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	2	0.04	0	А	0412M	QPSK	1	36	10 mm	back	1:1	0.469	1.059	0.497	A33
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	2	0.00	1	А	0412M	QPSK	36	0	10 mm	back	1:1	0.355	1.057	0.375	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	112	-0.04	0	А	0412M	QPSK	1	36	10 mm	front	1:1	0.322	1.059	0.341	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	112	-0.02													
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	2	0.03 0 A 0412M QPSK 1 36 10 mm bottom 1:1 0.152 1.059 0.161													
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	2	-0.02	1	Α	0412M	QPSK	36	0	10 mm	bottom	1:1	0.110	1.057	0.116	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	1	-0.05	0	А	0412M	QPSK	1	36	10 mm	right	1:1	0.332	1.059	0.352	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	1	0.04	1	А	0412M	QPSK	36	0	10 mm	right	1:1	0.263	1.057	0.278	
831.50	26865	Mid	LTE Band 26 (Cell)	15	24.0	23.75	112	0.00	0	А	0412M	QPSK	1	36	10 mm	left	1:1	0.157	1.059	0.166	
831.50	26865	Mid	LTE Band 26 (Cell)	15	23.0	22.76	112	0.03	1	А	0412M	QPSK	36	0	10 mm	left	1:1	0.132	1.057	0.140	
			ANSI / IEEE C95 Si Uncontrolled Exp	patial Peak											Bod 6 W/kg (raged over	mW/g)	1				

FCC ID: A3LSMS901E	PCTEST* Proud to be post of § siencers	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 80 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	rage 60 01 107

Table 11-37 LTE Band 66 (AWS) Hotspot SAR

										(,,,,,,	,	.opot	<u> </u>								
									MEASU	REMENT	RESULT	S									
FR	REQUENCY		Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	CI	1.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]		Config.	Number							(W/kg)	Factor	(W/kg)	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.00	26	-0.04	0	Α	0827M	QPSK	1	50	10 mm	back	1:1	0.464	1.072	0.497	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.02	26	-0.03	0	Α	0827M	QPSK	50	25	10 mm	back	1:1	0.466	1.067	0.497	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.00	26	-0.04	0	Α	0827M	QPSK	1	50	10 mm	front	1:1	0.334	1.072	0.358	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.02	26	0.01	0	Α	0827M	QPSK	50	25	10 mm	front	1:1	0.349	1.067	0.372	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	15	0.06	0	Α	0827M	QPSK	1	50	10 mm	bottom	1:1	0.697	1.072	0.747	A35	
1745.00	132322	Mid	LTE Band 66 (AWS)	20	19.3	18.74	13	0.00	0	Α	0827M	QPSK	1	bottom	1:1	0.552	1.138	0.628			
1770.00	132572	High	LTE Band 66 (AWS)	20	19.3	18.46	13	-0.03	0	Α	0827M	QPSK	1	50	10 mm	bottom	1:1	0.557	1.213	0.676	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.02	18	0.03	0	Α	0827M	QPSK	50	25	10 mm	bottom	1:1	0.688	1.067	0.734	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.00	54	0.03	0	Α	0827M	QPSK	1	50	10 mm	right	1:1	0.042	1.072	0.045	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.02	54	-0.04	0	Α	0827M	QPSK	50	25	10 mm	right	1:1	0.041	1.067	0.044	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	-0.04	0	Α	0827M	QPSK	1	50	10 mm	left	1:1	0.100	1.072	0.107			
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	0.00	0	Α	0827M	QPSK	50	25	10 mm	left	1:1	0.102	1.067	0.109			
			ANSI / IEEE C	95.1 1992 -	SAFETY LIM	IT									Bod	у					
				Spatial Pea	k				1					1.	6 W/kg (mW/g)					
			Uncontrolled Ex	posure/Ge	neral Popula	tion								ave	raged over	er 1 gram					

Table 11-38 I TE Band 4 (AWS) Hotspot SAR

								anu	4 (AV	ч э) п	otspo	LOA	<u> </u>							
								ME	ASUREM	ENT RES	ULTS									
FF	REQUENCY	′	Mode	Bandwidth	Maximum Allowed	Conducted	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot #
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	Drift [dB]	()	Config.	Number						, .,	(W/kg)	Factor	(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	0.04	0	F	1092M	QPSK	1	50	10 mm	back	1:1	0.088	1.167	0.103	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	0.03	0	F	1092M	QPSK	50	50	10 mm	back	1:1	0.085	1.169	0.099	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	-0.06 0 F 1092M QPSK 1 50 10 mm front 1:1 0.062 1.167 0.072													
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	0.03 0 F 1092M QPSK 50 50 10 mm front 1:1 0.063 1.169 0.074													
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	0.06	0	F	1092M	QPSK	1	50	10 mm	top	1:1	0.148	1.167	0.173	A37
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	-0.03	0	F	1092M	QPSK	50	50	10 mm	top	1:1	0.143	1.169	0.167	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.33	-0.07	0	F	1092M	QPSK	1	50	10 mm	right	1:1	0.020	1.167	0.023	
1732.50	20175	Mid	LTE Band 4 (AWS)	20	17.0	16.32	-0.12	0	F	1092M	QPSK	50	50	10 mm	right	1:1	0.020	1.169	0.023	
			NSI / IEEE C95.1 Spatia	al Peak										Bod 6 W/kg (raged over	mW/g)	1				

FCC ID: A3LSMS901E	PCTEST* Proud to be post of @ element	SAR EVALUATION REPORT	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:	Page 81 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset	Page of 01 107

Table 11-39 LTE Band 25 (PCS) Hotspot SAR

									<u> , </u>		,	spot (5 7								
								1	MEASUR	EMENT I	RESULTS	3									
FI	REQUENCY	Y	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]	` '	Config.	Number				.,		.,,,	(W/kg)	Factor	(W/kg)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	20	-0.05	0	Α	0831M	QPSK	1	50	10 mm	back	1:1	0.413	1.021	0.422	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.87	20	0.00	0	Α	0831M	QPSK	50	25	10 mm	back	1:1	0.408	1.030	0.420	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	20	0.00	0	Α	0831M	QPSK	1	50	10 mm	front	1:1	0.301	1.021	0.307	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.87	20	0.04	0	Α	0831M	QPSK	50	25	10 mm	front	1:1	0.304	1.030	0.313	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	20	-0.01	0.01 0 A 0831M QPSK 1 50 10 mm bottom 1:1 0.675 1.021 0.6											0.689	
1882.50	26365	Mid	LTE Band 25 (PCS)	20	19.0	18.49	20	0.01	0.01 0 A 0831M QPSK 1 0 10 mm bottom 1:1 0.695 1.125 0.782											A39	
1905.00	26590	High	LTE Band 25 (PCS)	20	19.0	18.35	20	0.02	0	Α	0831M	QPSK	1	50	10 mm	bottom	1:1	0.685	1.161	0.795	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.87	20	0.03	0	Α	0831M	QPSK	50	25	10 mm	bottom	1:1	0.669	1.030	0.689	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	20	-0.14	0	Α	0831M	QPSK	1	50	10 mm	right	1:1	0.030	1.021	0.031	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.87	20	0.03	0	Α	0831M	QPSK	50	25	10 mm	right	1:1	0.029	1.030	0.030	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	20	0.00	0.00 0 A 0831M QPSK 1 50 10 mm left 1:1 0.119 1.021 0.121												
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.87	20	-0.01	0	Α	0831M	QPSK	50	25	10 mm	left	1:1	0.128	1.030	0.132	
			ANSI / IEEE C9	5.1 1992 - 8	SAFETY LIMI	Г									Bod	y					
			Sı	patial Peak											6 W/kg (
			Uncontrolled Exp	osure/Gen	eral Populat	ion								ave	raged over	er 1 gram	ı				

Table 11-40 LTE Band 41 Hotspot SAR

																					
								MEASU	JREMEN	IT RESUL	.TS										
Power Class	FI	REQUENC	Υ	Mode	Bandwidth	Maximum Allowed	Conducted	Power	MPR [dB]	Antenna	Device Serial	Modulation	RB Size	RB Offset	Snacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
	MHz	C	Ch.		[MHz]	Power [dBm]	Power [dBm]	Drift [dB]	()	Config.	Number						, -,	(W/kg)	Factor	(W/kg)	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.83	0.05	0	В	0831M	QPSK	1	50	10 mm	back	1:1.58	0.260	1.040	0.270	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.81	0.02	0	В	0831M	QPSK	50	25	10 mm	back	1:1.58	0.263	1.045	0.275	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.83	0.01	0	В	0831M	QPSK	1	50	10 mm	front	1:1.58	0.226	1.040	0.235	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	22.81	0.05	0	В	0831M	QPSK	50	25	10 mm	front	1:1.58	0.229	1.045	0.239			
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.83	0.02	0	В	0831M	QPSK	1	50	10 mm	bottom	1:1.58	0.457	1.040	0.475	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.81	0.00	0	В	0831M	QPSK	50	25	10 mm	bottom	1:1.58	0.461	1.045	0.482	A41
Power Class 2	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.27	-0.02	0	В	0831M	QPSK	50	25	10 mm	bottom	1:2.31	0.306	1.183	0.362	
Power Class 3	Class 3 2549.50 40185 Low-Mid LTE Band 41 20 23.0 22.83										0831M	QPSK	1	50	10 mm	left	1:1.58	0.173	1.040	0.180	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	0.08	0	В	0831M	QPSK	50	25	10 mm	left	1:1.58	0.176	1.045	0.184			
		ANSI /		5.1 1992 - SAFET				·				Bod									
		Incontr		patial Peak osure/General P											6 W/kg (mW/g) er 1 gram					

Table 11-41 NR Band n5 Hotspot SAR

												ropot v	9 7 \									
										MEASUF	REMENT F	RESULTS										
F	REQUENCY		Mode	Bandwidth	Maximum Allowed	Conducted	Antenna	Power Drift	MPR (dB)	Tune State	Serial	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (1g)	Scaling	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power [dBm]	Power [dBm]	Config	[dB]			Number							, -,	(W/kg)	Factor	(W/kg)	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	А	0.02	0	2	0858M	DFT-S-OFDM	QPSK	1	53	10 mm	back	1:1	0.440	1.109	0.488	A43
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	А	-0.01	0	2	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	back	1:1	0.389	1.122	0.436	
836.50	167300	Mid	NR Band n5 (Cell)	20	22.5	22.48	А	-0.01	1.5	2	0858M	CP-OFDM	QPSK	1	1	10 mm	back	1:1	0.326	1.005	0.328	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	A	0.01	0	112	0858M	DFT-S-OFDM	QPSK	1	53	10 mm	front	1:1	0.334	1.109	0.370	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	А	-0.01	-0.01 0 112 0858M DFT-S-OFDM QPSK 50 28 10 mm front										0.309	1.122	0.347	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	А	0.02	0	2	0858M	DFT-S-OFDM	QPSK	1	53	10 mm	bottom	1:1	0.176	1.109	0.195	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	А	0.00	0	2	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	bottom	1:1	0.184	1.122	0.206	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	А	-0.02	0	1	0858M	DFT-S-OFDM	QPSK	1	53	10 mm	right	1:1	0.393	1.109	0.436	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	А	0.06	0	1	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	right	1:1	0.374	1.122	0.420	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.55	Α	0.00	0	112	0858M	DFT-S-OFDM	QPSK	1	53	10 mm	left	1:1	0.149	1.109	0.165	
836.50	167300	Mid	NR Band n5 (Cell)	20	24.0	23.50	А	0.01	0.01 0 112 0858M DFT-S-OFDM QPSK 50 28 10 mm left 1:1 0.154 1.122 0.173													
			ANSI / IEEE C			п					•	•			Body						•	
				Spatial Peak											.6 W/kg (mV							
	Uncontrolled Exposure/General Population													ave	eraged over 1	gram						Į.

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dama 92 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 82 of 107

Table 11-42 NR Band n66 Hotspot SAR

											EMENT RE	SULTS										
FR	REQUENCY			Bandwidth	Maximum	Conducted	Antenna	D			0		Г	<u> </u>				Π	SAR (1g)	Scaling	Reported	П
MHz	Ch.		Mode	[MHz]	Allowed Power [dBm]	Power [dBm]	Config	Power Drift [dB]	MPR [dB]	Tune State	Serial Number	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	(W/kg)	Factor	SAR (1g) (W/kg)	Plot #
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	А	-0.01	0	26	0867M	DFT-S-OFDM	QPSK	1	104	10 mm	back	1:1	0.449	1.114	0.500	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	A	0.00	0	26	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	back	1:1	0.485	1.135	0.550	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	А	-0.02	0	26	0867M	DFT-S-OFDM	QPSK	1	104	10 mm	front	1:1	0.355	1.114	0.395	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	А	-0.01	0	26	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	front	1:1	0.391	1.135	0.444	
1720.00	344000	Low	NR Band n66 (AWS)	20	21.0	20.11	A	-0.03	0	15	0867M	DFT-S-OFDM	QPSK	1	104	10 mm	bottom	1:1	0.889	1.227	1.091	
1745.00	349000	Mid	NR Band n66 (AWS)	20	21.0	20.29	А	0.02	0	13	0867M	DFT-S-OFDM	QPSK	1	104	10 mm	bottom	1:1	0.992	1.178	1.169	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	А	-0.02	0	13	0867M	DFT-S-OFDM	QPSK	1	104	10 mm	bottom	1:1	0.898	1.114	1.000	
1720.00	344000	Low	NR Band n66 (AWS)	20	21.0	19.99	A	-0.01	0	18	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	bottom	1:1	0.899	1.262	1.135	
1745.00	349000	Mid	NR Band n66 (AWS)	20	21.0	20.26	A	0.02	0	13	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	bottom	1:1	0.893	1.186	1.059	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	А	0.02	0	13	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	bottom	1:1	1.000	1.135	1.135	A45
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	19.97	Α	0.05	0	13	0867M	DFT-S-OFDM	QPSK	100	0	10 mm	bottom	1:1	0.926	1.268	1.174	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.19	Α	0.03	0	15	0867M	CP-OFDM	QPSK	1	1	10 mm	bottom	1:1	0.897	1.205	1.081	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	А	0.17	0	54	0867M	DFT-S-OFDM	QPSK	1	104	10 mm	right	1:1	0.077	1.114	0.086	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	A	-0.04	0	54	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	right	1:1	0.072	1.135	0.082	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	A	0.11	0	54	0867M	DFT-S-OFDM	QPSK	1	104	10 mm	left	1:1	0.141	1.114	0.157	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	A	0.13	0	54	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	left	1:1	0.175	1.135	0.199	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.90	F	-0.07	0	N/A	0858M	DFT-S-OFDM	QPSK	1	1	10 mm	back	1:1	0.355	1.288	0.457	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.88	F	-0.03	0	N/A	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	back	1:1	0.321	1.294	0.415	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.90	F	-0.02	0	N/A	0858M	DFT-S-OFDM	QPSK	1	1	10 mm	front	1:1	0.267	1.288	0.344	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.88	F	-0.04	0	N/A	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	front	1:1	0.250	1.294	0.324	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.90	F	0.00	0	N/A	0858M	DFT-S-OFDM	QPSK	1	1	10 mm	top	1:1	0.578	1.288	0.744	
1745.00	349000	Mid	NR Band n66 (AWS)	20	23.0	21.51	F	-0.07	0	N/A	0858M	DFT-S-OFDM	QPSK	1	104	10 mm	top	1:1	0.496	1.409	0.699	
1770.00	354000	High	NR Band n66 (AWS)	20	23.0	21.80	F	-0.01	0	N/A	0858M	DFT-S-OFDM	QPSK	1	104	10 mm	top	1:1	0.442	1.318	0.583	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.88	F	0.00	0	N/A	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	top	1:1	0.608	1.294	0.787	
1745.00	349000	Mid	NR Band n66 (AWS)	20	23.0	21.50	F	0.04	0	N/A	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	top	1:1	0.461	1.413	0.651	
1770.00	354000	High	NR Band n66 (AWS)	20	23.0	21.77	F	-0.01	0	N/A	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	top	1:1	0.461	1.327	0.612	
1720.00	344000	Low	NR Band n66 (AWS)	20	22.0	21.65	F	-0.06	1	N/A	0858M	DFT-S-OFDM	QPSK	100	0	10 mm	top	1:1	0.604	1.084	0.655	
1720.00	344000	Low	NR Band n66 (AWS)	20	21.5	21.20	F	0.13	1.5	N/A	0858M	CP-OFDM	QPSK	1	1	10 mm	top	1:1	0.552	1.072	0.592	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.90	F	-0.01	0	N/A	0858M	DFT-S-OFDM	QPSK	1	1	10 mm	right	1:1	0.147	1.288	0.189	
1720.00	344000	Low	NR Band n66 (AWS)	20	23.0	21.88	F	0.02	0	N/A	0858M	DFT-S-OFDM	QPSK	50	28	10 mm	right	1:1	0.128	1.294	0.166	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	А	0.01	0	13	0867M	DFT-S-OFDM	QPSK	50	28	10 mm	bottom	1:1	0.883	1.135	1.002	
			ANSI / IEEE C95	5.1 1992 - SA patial Peak	AFETY LIMIT									1	Body I.6 W/kg (mV	N/g)						
			Uncontrolled Exp		ral Population	on									eraged over 1							

Note: Blue entry represents variability measurement.

Table 11-43 WLAN SISO Hotspot SAR

							** -	114 31	<u>30 пс</u>	nape	יו טר	117							
							ı	MEASU	REMENT	RESUL	TS								
FREQUI	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			[MHz]	Power [dBm]	Power [dBm]	Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11b	DSSS	22	19.0	18.55	0.00	10 mm	2	0065M	1	back	98.9	0.423	0.358	1.109	1.011	0.401	
2412	1	802.11b	DSSS	22	19.0	18.55	-0.02	10 mm	2	0065M	1	front	98.9	0.062	0.050	1.109	1.011	0.056	
2412	1	802.11b	DSSS	22	18.55	0.03	10 mm	2	0065M	1	top	98.9	0.161	0.128	1.109	1.011	0.144		
2412	1	802.11b	DSSS	22	19.0	18.55	0.01	10 mm	2	0065M	1	left	98.9	0.016	0.014	1.109	1.011	0.016	
5775	155	802.11ac	OFDM	80	18.0	17.92	0.05	10 mm	1	1789M	29.3	back	92.4	0.114	-	1.019	1.082	-	
5775	155	802.11ac	OFDM	80	18.0	17.92	0.00	10 mm	1	1789M	29.3	front	92.4	0.064	-	1.019	1.082	-	
5775	155	802.11ac	OFDM	80	18.0	17.92	0.16	10 mm	1	1789M	29.3	left	92.4	0.129	0.098	1.019	1.082	0.108	
		ANSI / I	EEE C95.1 19	92 - SAFET	YLIMIT				•				•	Body			•	•	
			Spatial	Peak										1.6 W/kg (m)	N/g)				
		Uncontro	lled Exposure	e/General P	opulation			l					av	eraged over	l gram				

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dage 92 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 83 of 107

© 2021 PCTEST. REV 21.4 M

Table 11-44 DTS Hotspot SISO SAR during Conditions with 5 GHz WLAN and/or 5G NR

				.	or oloc	, 0,	44.11.	9				<u> </u>	, .		••••				
							ı	MEASU	REMENT	RESUL	_TS								
FREQUI	ENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed	Conducted Power [dBm]	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)				
2412	1	802.11b	DSSS	22	15.0	14.44	0.00	10 mm	2	1603M	1	back	98.9	0.233	0.164	1.138	1.011	0.189	
2412	1	802.11b	DSSS	22	15.0	14.44	0.02	10 mm	2	1603M	1	front	98.9	0.020	-	1.138	1.011	-	
2412	1	802.11b	DSSS	22	15.0	14.44	0.10	10 mm	2	1603M	1	top	98.9	0.065	-	1.138	1.011	-	
2412	1	802.11b	DSSS	22	15.0	14.44	0.02	10 mm	2	1603M	1	left	98.9	0.009	-	1.138	1.011	-	
		ANSI / II	EEE C95.1 19	92 - SAFET	Y LIMIT									Body					
			Spatial	Peak										1.6 W/kg (m\	W/g)				
		Uncontro	lled Exposure	e/General P	opulation								a١	eraged over	1 gram				

Note: 2.4 GHz SISO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI or 5G NR was not transmitting during the above evaluations.

Table 11-45
NII WLAN SISO Hotspot SAR for Conditions with 2.4 GHz WLAN SAR and/or 5G NR

					•		ı	MEASU	REMENT	RESUL	TS								
FREQU	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot #
MHz	Ch.			[MHz]	Power [dBm]	Power [dBm]	Drift [dB]	.,	Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
5775	155	802.11ac	OFDM	12.06	0.00	10 mm	1	1603M	29.3	back	92.4	0.070	0.038	1.242	1.082	0.051			
5775	155	802.11ac	OFDM	80	13.0	12.06	0.00	10 mm	1	1603M	29.3	front	92.4	0.032	-	1.242	1.082	-	
5775	155	802.11ac	OFDM	80	13.0	12.06	0.00	10 mm	1	1603M	29.3	left	92.4	0.070	-	1.242	1.082	-	
		ANSI / I	EEE C95.1 19	92 - SAFET	YLIMIT		<u> </u>							Body					
			Spatial	Peak										1.6 W/kg (m\	N/g)				
		Uncontro	lled Exposure	General P	opulation								av	eraged over 1	gram				

Note: 5 GHz SISO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 2.4 GHz WIFI or 5G NR was not transmitting during the above evaluations.

Table 11-46 WLAN MIMO Hotspot SAR

								· -/ \ \ \					· ·								
								ME	ASURE	MENT F	RESULTS	;									
FREQUI	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted Power (Ant 1)	Maximum Allowed	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			[MHz]	Power (Ant 1) [dBm]	[dBm]	Power (Ant 2) [dBm]	[dBm]	Drift [dB]	.,	Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11b	DSSS	22	19.0	18.60	19.0	18.55	-0.01	10 mm	MIMO	1603M	1	back	99.1	0.504	0.426	1.109	1.009	0.477	A47
2412	1	802.11b	DSSS	22	19.0	18.60	19.0	18.55	0.08	10 mm	MIMO	1603M	1	front	99.1	0.213		1.109	1.009		
2412	1	802.11b	DSSS	18.55	-0.02	10 mm	MIMO	1603M	1	top	99.1	0.088	0.072	1.109	1.009	0.081					
2412	1	802.11b	DSSS	18.55	-0.12	10 mm	MIMO	1603M	1	left	99.1	0.453	0.334	1.109	1.009	0.374					
5775	155	802.11ac	OFDM	80	18.0	17.92	18.0	17.52	-0.09	10 mm	MIMO	1789M	58.5	back	91.7	0.178	0.138	1.117	1.091	0.168	A49
5775	155	802.11ac	OFDM	80	18.0	17.92	18.0	17.52	-0.10	10 mm	MIMO	1789M	58.5	front	91.7	0.083		1.117	1.091		
5775	155	802.11ac	OFDM	80	18.0	17.92	18.0	17.52	0.11	10 mm	MIMO	1789M	58.5	top	91.7	0.033		1.117	1.091		
5775	155	802.11ac	OFDM	17.52	-0.03	10 mm	MIMO	1789M	58.5	left	91.7	0.172		1.117	1.091	-					
			ANSI / IE	EE C95.1 1	992 - SAFE	TY LIMIT										Body					
				Spatia	al Peak											1.6 W/kg (m	W/g)				
			Uncontrol	led Exposu	re/General F	Population									av	eraged over	1 gram				

Note: For 2.4 GHz WLAN, to achieve the 22.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 19.0 dBm. For 5 GHz WLAN, to achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dama 94 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 84 of 107

Table 11-47 DTS Hotspot MIMO SAR during Conditions with 5 GHz WLAN and/or 5G NR

					•			ME	ASURE	MENT F	RESULTS	3									
FREQU	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted Power (Ant 1)	Maximum Allowed	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	12 Cn. [dBm] ()										Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
2412	1	802.11n	OFDM	20	15.0	14.29	15.0	14.12	-0.09	10 mm	MIMO	0065M	13	back	91.3	0.271	0.214	1.225	1.095	0.287	
2412	1	802.11n	OFDM	20	15.0	14.29	15.0	14.12	-0.06	10 mm	MIMO	0065M	13	front	91.3	0.084	-	1.225	1.095	-	
2412	1	802.11n	OFDM	20	15.0	14.29	15.0	14.12	-0.10	10 mm	MIMO	0065M	13	top	91.3	0.096	-	1.225	1.095	-	
2412	1	802.11n	14.12	-0.06	10 mm	MIMO	0065M	13	left	91.3	0.124	-	1.225	1.095	-						
			ANSI / IE								Body										
					al Peak											1.6 W/kg (m					
			Uncontrol	led Exposu	re/General P	opulation									a	veraged over	1 gram				

Note: 2.4 GHz MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 5 GHz WIFI or 5G NR was not transmitting during the above evaluations.

Table 11-48 NII WLAN MIMO Hotspot SAR for Conditions with 2.4 GHz WLAN SAR and/or 5G NR

								ME	ASURE	MENT F	RESULTS	•									
FREQU	JENCY	Mode	Service	Bandwidth [MHz]	Maximum Allowed Power (Ant 1)	Conducted Power (Ant 1)	Maximum Allowed	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (1g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.		[dBm]	Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)						
5775	155	802.11ac	OFDM	80	11.87	-0.19	10 mm	MIMO	M0800	58.5	back	91.7	0.396	0.094	1.297	1.091	0.133				
5775	155	802.11ac	OFDM	80	13.0	12.06	13.0	11.87	0.04	10 mm	MIMO	M0800	58.5	front	91.7	0.174		1.297	1.091	-	
5775	155	802.11ac	OFDM	80	13.0	12.06	13.0	11.87	-0.13	10 mm	MIMO	M0800	58.5	top	91.7	0.134		1.297	1.091	-	
5775	155	802.11ac	OFDM	80	13.0	12.06	13.0	11.87	-0.06	10 mm	MIMO	0080M	58.5	left	91.7	0.291		1.297	1.091	-	
			ANSI / IE								Body										
				Spatia	al Peak											1.6 W/kg (m	W/g)				
			Uncontrol	ed Exposu	re/General P	opulation									av	veraged over	1 gram				

Note: 5 GHz MIMO was additionally evaluated at the maximum allowed output power during operations with Simultaneous 2.4 GHz and 5 GHz WLAN. 2.4 GHz WIFI or 5G NR was not transmitting during the above evaluations.

Table 11-49 DSS Hotspot SAR

							<i>3</i> 110t	<u> </u>	•,							
						MEAS	UREM	ENT RE	SULTS	;						
FREQU	JENCY	Mode	Service	Maximum Allowed	Conducted	Power	Spacing	Device Serial	Data Rate	Side	Duty Cycle	SAR (1g)	Scaling Factor (Cond	Scaling Factor (Duty	Reported SAR (1g)	Plot#
MHz	Ch.			Power [dBm]	Power [dBm]	Drift [dB]	.,	Number	(Mbps)		(%)	(W/kg)	Power)	Cycle)	(W/kg)	
2402	0	Bluetooth	FHSS	16.0	15.56	-0.08	10 mm	0080M	1	back	77.60	0.094	1.107	1.289	0.134	
2402	0	Bluetooth	FHSS	16.0	15.56	-0.11	10 mm	0080M	1	front	77.60	0.081	1.107	1.289	0.116	
2402	0	Bluetooth	FHSS	16.0	15.56	0.08	10 mm	0080M	1	top	77.60	0.017	1.107	1.289	0.024	
2402	0	Bluetooth	FHSS	16.0	15.56	-0.14	10 mm	0080M	1	left	77.60	0.132	1.107	1.289	0.188	A51
		ANSI / IEEE (C95.1 1992 - S	AFETY LIMIT								Body				
			Spatial Peak								1	.6 W/kg (m\	N/g)			
		Uncontrolled E	xposure/Gen	eral Populati	on						ave	eraged over 1	l gram			

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 05 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 85 of 107

11.4 Standalone Phablet SAR Data

Table 11-50 GPRS Phablet SAR Data

						MEAS	JREME	NT RESU	JLTS							
FREQUE	ENCY	Mode	Service	Maximum Allowed	Conducted	Power	Spacing	Antenna	Device Serial	# of Time	Duty Cycle	Side	SAR (10g)	Scaling	Reported SAR (10g)	Plot#
MHz	Ch.			Power [dBm]	Power [dBm]	Drift [dB]	3	Config.	Number	Slots			(W/kg)	Factor	(W/kg)	
1909.80	810	GSM 1900	GPRS	27.5	25.98	-0.12	9 mm	Α	0866M	3	1:2.76	back	0.407	1.419	0.578	
1909.80	810	GSM 1900	GPRS	27.5	25.98	-0.05	7 mm	Α	0866M	3	1:2.76	front	0.356	1.419	0.505	
1909.80	810	GSM 1900	GPRS	27.5	25.98	-0.02	13 mm	Α	0866M	3	1:2.76	bottom	0.582	1.419	0.826	
1909.80	810	GSM 1900	GPRS	27.5	25.98	-0.15	0 mm	Α	0866M	3	1:2.76	right	0.183	1.419	0.260	
1909.80	810	GSM 1900	GPRS	27.5	25.98	-0.06	0 mm	Α	0866M	3	1:2.76	left	0.534	1.419	0.758	
1880.00	661	GSM 1900	GPRS	25.5	25.31	-0.04	0 mm	Α	0866M	3	1:2.76	back	0.999	1.045	1.044	
1880.00	661	GSM 1900	GPRS	25.5	25.31	0.03	0 mm	Α	0866M	3	1:2.76	front	0.881	1.045	0.921	
1880.00	661	GSM 1900	GPRS	25.5	25.31	0.00	0 mm	Α	0866M	3	1:2.76	bottom	1.120	1.045	1.170	A52
		ANSI / IEEE C		AFETY LIMIT	г			•	-	·	•	Phablet			•	, and the second
			Spatial Peak									N/kg (m	•			
		Uncontrolled E	xposure/Gen	eral Populati	on						average	ed over 1	0 grams			

Table 11-51 UMTS Phablet SAR Data

								UREME		BULTS							
			T		Maximum	Conducted	Tune	Power		Antenna	Device			SAR (10g)	Scaling	Reported SAR (10g)	
	Mode	ie		Service	Allowed Power [dBm]	Power [dBm]	State	Drift [dB]	Spacing	Config.	Serial Number	Duty Cycle	Side	(W/kg)	Factor	(W/kg)	Plot #
M	UMTS 175	1750		RMC	24.0	23.42	26	0.00	9 mm	Α	0827M	1:1	back	0.737	1.143	0.842	
M	UMTS 175	1750		RMC	24.0	23.42	26	0.03	7 mm	Α	0827M	1:1	front	0.650	1.143	0.743	
M	UMTS 175	1750		RMC	24.0	23.42	26	-0.02	13 mm	Α	0827M	1:1	bottom	0.627	1.143	0.717	
M	UMTS 175	1750		RMC	24.0	23.42	26	0.01	0 mm	Α	0827M	1:1	right	0.264	1.143	0.302	
M	UMTS 175	1750		RMC	24.0	23.42	26	0.00	0 mm	Α	0827M	1:1	left	0.815	1.143	0.932	
M	UMTS 175	1750		RMC	20.0	19.39	26	0.00	0 mm	Α	0827M	1:1	back	1.340	1.151	1.542	
52.60 1513 UMTS 1750 2.40 1312 UMTS 1750					20.0	19.39	26	-0.02	0 mm	Α	0827M	1:1	front	1.170	1.151	1.347	
M	UMTS 175	1750		RMC	20.0	19.27	26	-0.02	0 mm	Α	0827M	1:1	bottom	1.430	1.183	1.692	
IM	UMTS 175	1750		RMC	20.0	19.34	26	0.00	0 mm	Α	0827M	1:1	bottom	1.460	1.164	1.699	A53
M	UMTS 175	1750		RMC	20.0	19.39	26	0.02	0 mm	Α	0827M	1:1	bottom	1.340	1.151	1.542	
IM	UMTS 190	1900		RMC	24.7	23.70	17	-0.03	9 mm	Α	0827M	1:1	back	0.472	1.259	0.594	
M	UMTS 190	1900		RMC	24.7	23.70	17	-0.02	7 mm	Α	0827M	1:1	front	0.388	1.259	0.488	
M	UMTS 190	1900		RMC	24.7	23.70	17	-0.02	13 mm	Α	0827M	1:1	bottom	0.498	1.259	0.627	
M	UMTS 190	1900		RMC	24.7	23.70	17	0.02	0 mm	Α	0827M	1:1	right	0.223	1.259	0.281	
M	UMTS 190	1900		RMC	24.7	23.70	17	0.00	0 mm	Α	0827M	1:1	left	0.884	1.259	1.113	
M	UMTS 190	1900	ı	RMC	20.0	19.55	17	0.00	0 mm	Α	0827M	1:1	back	1.040	1.109	1.153	
852.40 9262 UMTS 1900 RMC 20.0 19.55 17									0 mm	Α	0827M	1:1	front	0.785	1.109	0.871	
M	UMTS 190	1900		RMC	20.0	19.55	17	-0.03	0 mm	Α	0827M	1:1	bottom	1.180	1.109	1.309	A54
	ANS	ANSI /	IEE		2 - SAFETY	LIMIT						•		blet		•	
				Spatial I										g (mW/g)			
IM	UMTS 190	1900 ANSI /		RMC EE C95.1 199 Spatial I	20.0 32 - SAFETY	19.55 LIMIT		-0.03				1:1	bottom Pha 4.0 W/kg	1.180 ablet			

FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo 96 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 86 of 107

Table 11-52 LTE Band 66 (AWS) Phablet SAR

								Dun	u 00	(/////	<i>,</i>	abici	O , (.	`							
								ME	ASUREN	IENT RE	SULTS										
FR	EQUENCY	,	Mode	Bandwidth	Maximum Allowed	Conducted	Tune	Power	MPR [dB]	Antenna	Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling	Reported SAR (10g)	Plot#
MHz	С	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]		Config.	Number							(W/kg)	Factor	(W/kg)	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	26	0.14	0	Α	0827M	QPSK	1	0	9 mm	back	1:1	0.635	1.000	0.635	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	26	-0.03	1	Α	0827M	QPSK	50	25	9 mm	back	1:1	0.474	1.014	0.481	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	26	-0.11	0	Α	0827M	QPSK	1	0	7 mm	front	1:1	0.496	1.000	0.496	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	26	-0.03	1	Α	0827M	QPSK	50	25	7 mm	front	1:1	0.426	1.014	0.432	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	26	0.04	0	Α	0827M	QPSK	1	0	13 mm	bottom	1:1	0.819	1.000	0.819	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	26	0.00	1	Α	0827M	QPSK	50	25	13 mm	bottom	1:1	0.604	1.014	0.612	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	52	0.06	0	Α	0827M	QPSK	1	0	0 mm	right	1:1	0.162	1.000	0.162	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	52	0.01	1	Α	0827M	QPSK	50	25	0 mm	right	1:1	0.129	1.014	0.131	
1770.00	132572	High	LTE Band 66 (AWS)	20	23.8	23.80	26	-0.02	0	Α	0827M	QPSK	1	0	0 mm	left	1:1	0.613	1.000	0.613	
1770.00	132572	High	LTE Band 66 (AWS)	20	22.8	22.74	26	-0.18	1	Α	0827M	QPSK	50	25	0 mm	left	1:1	0.464	1.014	0.470	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.00	52	0.05	0	А	0827M	QPSK	1	50	0 mm	back	1:1	1.100	1.072	1.179	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.02	52	-0.01	0	Α	0827M	QPSK	50	25	0 mm	back	1:1	1.110	1.067	1.184	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.00	26	0.01	0	Α	0827M	QPSK	1	50	0 mm	front	1:1	1.130	1.072	1.211	A55
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.02	26	-0.04	0	А	0827M	QPSK	50	25	0 mm	front	1:1	1.100	1.067	1.174	
1720.00	132072	Low	LTE Band 66 (AWS)	20	19.3	19.00	0.03	0	Α	0827M	QPSK	1	50	0 mm	bottom	1:1	1.090	1.072	1.168		
1720.00	132072	Low	LTE Band 66 (AWS)	20	0.00	0	Α	0827M	QPSK	50	25	0 mm	bottom	1:1	1.090	1.067	1.163				
			ANSI / IEEE CS	95.1 1992 -	SAFETY LIM							F	hablet								
			5	Spatial Pea	k				1					4.0 W	/kg (mW	/g)					
			Uncontrolled Ex	posure/Ge	neral Popula	tion								averaged	over 10	grams					

Table 11-53 LTE Band 25 (PCS) Phablet SAR

										(,	ibict (
								MEA	SUREM	ENT RES	ULTS										
FF	REQUENCY	,	Mode	Bandwidth	Maximum	Conducted	Tune	Power	MPR [dB]	Antenna	Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling	Reported SAR (10g)	Plot #
MHz	C	h.		[MHz]	Power [dBm]	Power [dBm]	State	Drift [dB]		Config.	Number							(W/kg)	Factor	(W/kg)	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	20	-0.04	0	Α	0831M	QPSK	1	0	9 mm	back	1:1	0.530	1.000	0.530	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	20	-0.01	1	Α	0831M	QPSK	50	0	9 mm	back	1:1	0.411	1.026	0.422	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	20	-0.02	0	Α	0831M	QPSK	1	0	7 mm	front	1:1	0.466	1.000	0.466	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	20	-0.02	1	Α	0831M	QPSK	50	0	7 mm	front	1:1	0.361	1.026	0.370	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	20	0.03	0	Α	0831M	QPSK	1	0	13 mm	bottom	1:1	0.561	1.000	0.561	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	20	0.00	1	Α	0831M	QPSK	50	0	13 mm	bottom	1:1	0.430	1.026	0.441	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	20	0.07	0	Α	0831M	QPSK	1	0	0 mm	right	1:1	0.219	1.000	0.219	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	20	0.01	1	Α	0831M	QPSK	50	0	0 mm	right	1:1	0.170	1.026	0.174	
1860.00	26140	Low	LTE Band 25 (PCS)	20	23.5	23.50	20	-0.21	0	Α	0831M	QPSK	1	0	0 mm	left	1:1	0.773	1.000	0.773	
1860.00	26140	Low	LTE Band 25 (PCS)	20	22.5	22.39	20	0.02	1	Α	0831M	QPSK	50	0	0 mm	left	1:1	0.578	1.026	0.593	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	20	0.02	0	Α	0831M	QPSK	1	50	0 mm	back	1:1	1.140	1.021	1.164	A56
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.87	20	-0.01	0	Α	0831M	QPSK	50	25	0 mm	back	1:1	1.130	1.030	1.164	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	20	-0.10	0	Α	0831M	QPSK	1	50	0 mm	front	1:1	0.690	1.021	0.704	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.87	20	-0.03	0	Α	0831M	QPSK	50	25	0 mm	front	1:1	0.769	1.030	0.792	
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	18.91	0.01	0	Α	0831M	QPSK	1	50	0 mm	bottom	1:1	1.140	1.021	1.164		
1860.00	26140	Low	LTE Band 25 (PCS)	20	19.0	-0.01	0	Α	0831M	QPSK	50	25	0 mm	bottom	1:1	1.120	1.030	1.154			
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														hablet /kg (mW over 10	•					

FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 97 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 87 of 107

Table 11-54 LTE Band 41 Phablet SAR

										RESULTS		,									
Power Class	F	REQUENC	Υ	Mode	Bandwidth	Maximum Allowed	Conducted	Power	MPR [dB]	Antenna	Serial	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling	Reported SAR (10g)	Plot#
	MHz		Ch.		[MHz]	Power [dBm]	Power [dBm]	Drift [dB]		Config.	Number						, _,	(W/kg)	Factor	(W/kg)	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	0.02	0	В	0861M	QPSK	1	0	9 mm	back	1:1.58	0.220	1.067	0.235	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	-0.08	1	В	0861M	QPSK	50	50	9 mm	back	1:1.58	0.145	1.079	0.156	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	0.11	0	В	0861M	QPSK	1	0	7 mm	front	1:1.58	0.296	1.067	0.316	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	-0.06	1	В	0861M	QPSK	50	50	7 mm	front	1:1.58	0.230	1.079	0.248	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	-0.13	0	В	0861M	QPSK	1	0	13 mm	bottom	1:1.58	0.309	1.067	0.330	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	-0.08	1	В	0861M	QPSK	50	50	13 mm	bottom	1:1.58	0.223	1.079	0.241	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	25.0	24.72	-0.01	0	В	0861M	QPSK	1	0	0 mm	left	1:1.58	1.080	1.067	1.152	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	24.0	23.67	0.06	1	В	0861M	QPSK	50	50	0 mm	left	1:1.58	0.884	1.079	0.954	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	-0.11	0	В	0861M	QPSK	1	50	0 mm	back	1:1.58	1.310	1.040	1.362	A57	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.81	-0.03	0	В	0861M	QPSK	50	25	0 mm	back	1:1.58	1.260	1.045	1.317	
Power Class 2	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.40	-0.03	0	В	0861M	QPSK	1	50	0 mm	back	1:2.31	0.874	1.148	1.003	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.83	-0.04	0	В	0861M	QPSK	1	50	0 mm	front	1:1.58	0.947	1.040	0.985	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.81	-0.05	0	В	0861M	QPSK	50	25	0 mm	front	1:1.58	0.938	1.045	0.980	
Power Class 3	2549.50	40185	Low-Mid	LTE Band 41	20	23.0	22.83	0.02	0	В	0861M	QPSK	1	50	0 mm	bottom	1:1.58	1.060	1.040	1.102	
Power Class 3	class 3 2549.50 40185 Low-Mid LTE Band 41 20 23.0 22.81										0861M	QPSK	50	25	0 mm	bottom	1:1.58	1.040	1.045	1.087	
	ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									•		•			Phab 0 W/kg (aged over		is			•	

Table 11-55 NR Band n66 Phablet SAR

									ı	MEASURE	MENT RE	SULTS										
F	REQUENCY		Mode	Bandwidth	Maximum Allowed	Conducted	Antenna	Power Drift	MPR (dB)	Tune State	Serial	Waveform	Modulation	RB Size	RB Offset	Spacing	Side	Duty Cycle	SAR (10g)	Scaling	Reported SAR (10g)	Plot#
MHz	Ch.		mode	[MHz]	Power [dBm]	Power [dBm]	Config	[dB]	mi it (ub)	Tune Olate	Number	Wateroniii	modulation	IND OILE	ND OILE	opacing	Olde	buty cycle	(W/kg)	Factor	(W/kg)	1101#
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	A	-0.01	0	26	0867M	DFT-S-OFDM	QPSK	1	104	9 mm	back	1:1	0.926	1.216	1.126	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	Α	0.01	0	26	0867M	DFT-S-OFDM	QPSK	50	28	9 mm	back	1:1	0.913	1.250	1.141	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	Α	-0.02	0	26	0867M	DFT-S-OFDM	QPSK	1	104	7 mm	front	1:1	1.090	1.216	1.325	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	A	-0.01	0	26	0867M	DFT-S-OFDM	QPSK	50	28	7 mm	front	1:1	1.070	1.250	1.338	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	Α	0.02	0	26	0867M	DFT-S-OFDM	QPSK	1	104	13 mm	bottom	1:1	0.830	1.216	1.009	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	A	0.07	0	26	0867M	DFT-S-OFDM	QPSK	50	28	13 mm	bottom	1:1	0.829	1.250	1.036	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	Α	-0.01	0	52	0867M	DFT-S-OFDM	QPSK	1	104	0 mm	right	1:1	0.346	1.216	0.421	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	A	0.08	0	52	0867M	DFT-S-OFDM	QPSK	50	28	0 mm	right	1:1	0.373	1.250	0.466	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.15	Α	0.10	0	26	0867M	DFT-S-OFDM	QPSK	1	104	0 mm	left	1:1	0.972	1.216	1.182	
1770.00	354000	High	NR Band n66 (AWS)	20	25.0	24.03	A	0.01	0	26	0867M	DFT-S-OFDM	QPSK	50	28	0 mm	left	1:1	0.967	1.250	1.209	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	Α	-0.06	0	52	0867M	DFT-S-OFDM	QPSK	1	104	0 mm	back	1:1	1.570	1.114	1.749	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	Α	-0.07	0	52	0867M	DFT-S-OFDM	QPSK	50	28	0 mm	back	1:1	1.590	1.135	1.805	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	A	0.01	0	26	0867M	DFT-S-OFDM	QPSK	1	104	0 mm	front	1:1	1.440	1.114	1.604	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.45	Α	-0.02	0	26	0867M	DFT-S-OFDM	QPSK	50	28	0 mm	front	1:1	1.440	1.135	1.634	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.53	Α	0.01	0	5	0867M	DFT-S-OFDM	QPSK	1	104	0 mm	bottom	1:1	1.670	1.114	1.860	
1720.00	344000	Low	NR Band n66 (AWS)	20	21.0	19.99	А	0.00	0	5	0867M	DFT-S-OFDM	QPSK	50	28	0 mm	bottom	1:1	1.770	1.262	2.234	
1745.00	349000	Mid	NR Band n66 (AWS)	20	21.0	20.26	Α	-0.02	0	5	0867M	DFT-S-OFDM	QPSK	50	28	0 mm	bottom	1:1	1.710	1.186	2.028	
1770.00	354000 High NR Band n66 (AWS) 20 21.0 20.45 A							-0.03	0	5	0867M	DFT-S-OFDM	QPSK	50	28	0 mm	bottom	1:1	1.880	1.135	2.134	A58
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	19.97	Α	-0.03	0	5	0867M	DFT-S-OFDM	QPSK	100	0	0 mm	bottom	1:1	1.650	1.268	2.092	
1770.00	354000	High	NR Band n66 (AWS)	20	21.0	20.19	A	-0.01	0	5	0867M	CP-OFDM	QPSK	1	1	0 mm	bottom	1:1	1.720	1.205	2.073	
		ANSI / IEEE C95.1 1992 - SAFETY LIMIT								•			•	•	Phablet		•					
				atial Peak											.0 W/kg (ml							
			Uncontrolled Expo	sure/Genera	al Population	1								aver	aged over 10	grams						

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 99 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 88 of 107

© 2021 PCTEST. REV 21.4 M

Table 11-56 WLAN SISO Phablet SAR

						ı	MEASU	REMENT	RESUL	_TS								
ICY	Mode	Service	Bandwidth	Maximum Allowed	Conducted	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (10g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (10g)	Plot #
Ch.			[MHZ]	Power [dBm]	Power [dBm]	Drift [dB]		Config.	Number	(Mbps)		(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	
58	802.11ac	OFDM	80	18.0	17.73	0.02	0 mm	1	1789M	29.3	back	92.4	3.020	0.672	1.064	1.082	0.774	
58	802.11ac	OFDM	80	18.0	17.73	-0.03	0 mm	1	1789M	29.3	front	92.4	2.540	-	1.064	1.082		
58	802.11ac	OFDM	80	18.0	17.73	-0.04	0 mm	1	1789M	29.3	left	92.4	7.210	1.040	1.064	1.082	1.197	
138	802.11ac	OFDM	80	18.0	17.86	0.08	0 mm	1	1789M	29.3	back	92.4	2.670	-	1.033	1.082	-	
138	802.11ac	OFDM	80	18.0	17.86	0.02	0 mm	1	1789M	29.3	front	92.4	2.940	-	1.033	1.082	-	
138	802.11ac	OFDM	80	18.0	17.86	-0.07	0 mm	1	1789M	29.3	left	92.4	4.730	0.760	1.033	1.082	0.849	
171	802.11ac	OFDM	80	18.0	17.42	-0.07	0 mm	1	1603M	29.3	back	92.4	2.480	-	1.143	1.082	-	
171	802.11ac	OFDM	80	18.0	17.42	-0.08	0 mm	1	1603M	29.3	front	92.4	1.150	-	1.143	1.082	-	
171	802.11ac	OFDM	-0.01	0 mm	1	1603M	29.3	left	92.4	2.730	0.547	1.143	1.082	0.676				
	ANSI / IE	EEE C95.1 19	92 - SAFET	Y LIMIT									Phablet					
		Spatial	Peak		ĺ						4.0 W/kg (m\	N/g)						
	Uncontrol	led Exposure	/General P	opulation								ave	raged over 10	grams				
	Ch. 58 58 58 138 138 131 131 171 171	Mode Ch. 58 802.11ac 58 802.11ac 58 802.11ac 138 802.11ac 138 802.11ac 138 802.11ac 171 802.11ac 171 802.11ac 171 802.11ac 171 802.11ac 171 802.11ac	Mode Service Ch. Service 58 802.11ac OFDM 58 802.11ac OFDM 58 802.11ac OFDM 138 802.11ac OFDM 138 802.11ac OFDM 171 802.11ac OFDM 171 802.11ac OFDM 171 802.11ac OFDM ANSI / IEEE C95.1 19 Spatial	Mode Service Bandwitter [MHz]	Mode Service Bandwint Allowed Power [dBm]	Mode	Node Service Bandwidth Maximum Power [dBm] Pow	Note Service Bandwidth Maximum Power [dBm] Pow	Note Service Bandwidth Maximum Allowed Power (dBm) Conducted Power (dBm) Power prift [dB] Spacing Antenna Config.	Note Service Bandwidth Maximum Allowed Power (dBm) Conducted Power (dBm) Power (dB	Note Service Bandwidth Maximum Power [dBm] Power [dBm] Drift [dB] Spacing Antenna Config. Number Rate Number Rate	Note Service Bandwidth Power [dBm] Power [dBm]	Name	Note Service Bandwidth (IMHz) Power [dBm] Power	Note Part Part	Note Park SAR of SAR (10g) Power [dBm] Power [dB	Note Park Provest Park Provest Pro	Note Note

Table 11-57 WLAN MIMO Phablet SAR

								ME	ASURE	MENT R	RESULTS	;									
FREQUI	ENCY	Mode	Service	Bandwidth	Maximum Allowed	Conducted Power (Ant 1)	Maximum Allowed	Conducted Power (Ant 2)	Power	Spacing	Antenna	Device Serial	Data Rate	Side	Duty Cycle	Peak SAR of Area Scan	SAR (10g)	Scaling Factor	Scaling Factor (Duty	Reported SAR (10g)	Plot#
MHz	Ch.	mode	Corvice	[MHz]	Power (Ant 1) [dBm]	[dBm]	Power (Ant 2) [dBm]	[dBm]	Drift [dB]	Ористу	Config.	Number	(Mbps)	Olde	(%)	W/kg	(W/kg)	(Power)	Cycle)	(W/kg)	1.101.15
5290	58	802.11ac	OFDM	80	18.0	17.73	18.0	17.39	0.00	0 mm	MIMO	1789M	58.5	back	91.7	4.340	0.818	1.151	1.091	1.027	
5290	58	802.11ac	OFDM	80	18.0	17.73	18.0	17.39	0.00	0 mm	MIMO	1789M	58.5	front	91.7	3.350		1.151	1.091		
5290	58	802.11ac	OFDM	80	18.0	17.73	18.0	17.39	-0.03	0 mm	MIMO	1789M	58.5	top	91.7	0.673		1.151	1.091	-	
5290	58	802.11ac	OFDM	80	18.0	17.73	18.0	17.39	0.01	0 mm	MIMO	1789M	58.5	left	91.7	6.760	1.060	1.151	1.091	1.331	A59
5690	138	802.11ac	OFDM	80	18.0	17.86	18.0	17.39	-0.04	0 mm	MIMO	1789M	58.5	back	91.7	1.880		1.151	1.091		
5690	138	802.11ac	OFDM	80	18.0	17.86	18.0	17.39	-0.03	0 mm	MIMO	1789M	58.5	front	91.7	2.300		1.151	1.091	-	
5690	138	802.11ac	OFDM	80	18.0	17.86	18.0	17.39	0.02	0 mm	MIMO	1789M	58.5	top	91.7	0.396		1.151	1.091	-	
5690	138	802.11ac	OFDM	80	18.0	17.86	18.0	17.39	-0.05	0 mm	MIMO	1789M	58.5	left	91.7	4.890	0.715	1.151	1.091	0.898	
5855	171	802.11ac	OFDM	80	18.0	17.42	18.0	17.59	-0.02	0 mm	MIMO	1603M	58.5	back	91.7	1.890		1.143	1.091	-	
5855	171	802.11ac	OFDM	80	18.0	17.42	18.0	17.59	-0.05	0 mm	MIMO	1603M	58.5	front	91.7	1.200		1.143	1.091	-	
5855	171	802.11ac	OFDM	80	18.0	17.42	18.0	17.59	-0.04	0 mm	MIMO	1603M	58.5	top	91.7	0.292		1.143	1.091	-	
5855	171	802.11ac	-0.09	0 mm	MIMO	1603M	58.5	left	91.7	4.520	0.562	1.143	1.091	0.701							
										Phablet											
					al Peak											4.0 W/kg (m	-				
			Uncontrol	iea Exposu	re/General F	opulation									ave	raged over 1	u grams				

Note: To achieve the 21.0 dBm maximum allowed MIMO power shown in the documentation, each antenna transmits at a maximum allowed power of 18.0 dBm.

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 90 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 89 of 107

11.5 SAR Test Notes

General Notes:

- 1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
- 2. Batteries are fully charged at the beginning of the SAR measurements.
- 3. Liquid tissue depth was at least 15.0 cm for all frequencies.
- 4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
- 5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D01v06.
- 6. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 15 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.
- 7. Per FCC KDB Publication 648474 D04v01r03, body-worn SAR was evaluated without a headset connected to the device. Since the standalone reported body-worn SAR was ≤ 1.2 W/kg, no additional body-worn SAR evaluations using a headset cable were required.
- 8. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 12 for variability analysis.
- 9. During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v02r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 6.7 for more details).
- 10. Per FCC KDB Publication 648474 D04v01r03, this device is considered a "phablet" since the display diagonal dimension is > 150 mm and < 200 mm. Therefore, phablet SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg.
- 11. This device supports dynamic antenna tuning for some bands. Per FCC Guidance, SAR was measured according to the normally required SAR measurement configurations with tuner active. The auto-tune state determined by the device was verified before and after each SAR measurement and is listed in tables above. Please see Section 13 for supplemental data.
- 12. Additional SAR tests for phablet SAR were evaluated per KDB 616217 Section 6 (See Section 6.9 for more information).
- 13. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the 1g thresholds for the equivalent test cases.

GSM Test Notes:

- 1. Body-Worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.
- Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October 2013
 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all
 GPRS/EDGE slot configurations. The configuration with the highest target frame averaged output power
 was evaluated for hotspot SAR. When the maximum frame-averaged powers are equivalent across two or
 more slots (within 0.25 dB), the configuration with the most number of time slots was tested.
- 3. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the highest output power channel for each test configuration is \leq 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s).

UMTS Notes:

 UMTS mode was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 00 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 90 of 107

PCTEST. REV 21.4 N

2. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) SAR measured at the highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations then testing at the other channels is not required for such test configuration(s).

LTE Notes:

- 1. LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 8.5.4.
- 2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 6.2.5 under Table 6.2.3-1.
- 3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
- 4. Per FCC KDB Publication 447498 D01v06, when the reported 1g SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for LTE B41 testing at the other channels was required for such test configurations.
- 5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
- 6. Per KDB Publication 941225 D05Av01r02, SAR for downlink only LTE CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.
- 7. This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with power class 2 at the available duty factor was additionally performed for the power class 3 configuration with the highest SAR configuration for each exposure conditions. Please see Section 13 for linearity results.

NR Notes:

- 1. NR implementation supports SA and NSA mode. In EN-DC mode, NR operates with the LTE Bands shown in the NR FR1 checklist acting as anchor bands. Per FCC guidance, SAR tests for NR Bands and LTE Anchors Bands were performed separately due to limitations in SAR probe calibration factors.
- 2. Due to test setup limitations, SAR testing for NR was performed using test mode software to establish the connection.
- 3. Simultaneous transmission analysis for EN-DC operations is included in Appendix D.
- 4. This device additionally supports some EN-DC conditions where additional LTE carriers are added on the downlink only. Per FCC guidance, all unique uplink combinations were assessed.
- 5. Per FCC Guidance, the device was configured with the tuner state selected by the device in LTE mode with auto-tune active at the same frequency as the NR test results. Additional tuner states were evaluated per April 2019 TCBC Workshop Guidance. Please see Section 14 for supplemental data.
- 6. Per FCC Guidance, NR modulations and RB Sizes/Offsets were selected for testing such that configurations with the highest output power were evaluated for SAR tests.

WLAN Notes:

1. For held-to-ear, and hotspot, and phablet operations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg for 1g evaluations, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogo 01 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 91 of 107

© 2021 PCTEST.

REV 21.4 N
09/11/2015

- 2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n/ax) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 8.6.5 for more
- 3. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 8.6.6 for more information.
- 4. Per KDB Publication 248227 D01v02r02, SAR for MIMO was evaluated by following the simultaneous SAR provisions from KDB Publication 447498 D01v06 by either evaluating the sum of the 1g SAR values of each antenna transmitting independently or making a SAR measurement with both antennas transmitting simultaneously. Please see Appendix D for complete analysis.
- 5. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured.
- 6. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated EMC test reports.
- 7. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Bluetooth Notes

thereof, please contact INFO@PCTEST.COM.

- 1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests test mode type. Per October 2016 TCB Workshop Notes, the reported SAR was scaled to the 100% transmission duty factor to determine compliance. See Section 9.6 for the time domain plot and calculation for the duty factor of the device.
- 2. Head and Hotspot Bluetooth SAR were evaluated for BT BR tethering applications.

FCC ID: A3LSMS901E	Proud to be part of element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 02 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 – 12/14/21	Portable Handset		Page 92 of 107

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

- When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
- A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1a SAR limit).
- 3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
- Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
- When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

Table 12-1 Body SAR Measurement Variability Results

	200y 07 11 modelin om on the country through														
	BODY VARIABILITY RESULTS														
Band	FREQU	JENCY	Mode	Service S		Side Spacing		Tune State	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.							(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1750	1770.00	354000	NR Band n66 (AWS), 20 MHz Bandwidth	DFT-S-OFDM, QPSK, 50 RB, 28 RB Offset bottom		10 mm	Α	13	1.000	0.883	1.13	N/A	N/A	N/A	N/A
			ANSI / IEEE C95.1 1992 -	SAFETY LIMIT				Body							
	Spatial Peak						1.6 W/kg (mW/g)								
			Uncontrolled Exposure/Ge	neral Population				averaged over 1 gram							

12.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.

	FCC ID: A3LSMS901E	Proud to be post of element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
	Document S/N:	Test Dates:	DUT Type:		D 00 -f 407
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	12/14/21 Portable Handset		Page 93 of 107
© 202	1 PCTEST.				REV 21.4 M

13 ADDITIONAL TESTING PER FCC GUIDANCE

13.1 Tuner Testing

Per April 2019 TCB Workshop Notes, the following test procedures were followed to demonstrate that the SAR results in Section 11 represented the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR was measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Per FCC Guidance, during NR testing the device was configured with the tuner state selected by the device in LTE mode with auto-tune active at the same frequency. The additional tuner hardware has no influence on the antenna characteristics, other than impedance matching.

To evaluate all the tuner states, the 120 tuner states were divided among the aggregate band, mode and exposure combinations. Single point time-sweep measurements were performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state was able to be established remotely so that the device was not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe remained stationary at the same position throughout the entire series of single point measurements for each combination. When the single point SAR or 1g SAR was > 1.2 W/kg for a particular band/mode/exposure condition, point SAR measurements were made for all 120 states.

The operational description contains more information about the design and implementation of the dynamic antenna tuning.

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dog 04 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 94 of 107

© 2021 PCTEST.

REV 21.4 M
09/11/2019

Table 13-1 LIMTS Supplemental Head SAR Data

		UM IS Supplement	ai Head SAR Data	1		
		Supplemental H	lead SAR Data			
UMTS	S B5	UMTS	S B4	UMTS B2		
RM	RMC		IC	RMC		
Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek	
Frequency (MHz)	836.60	Frequency (MHz)	1752.60	Frequency (MHz)	1852.40	
Channel	4183	Channel	1513	Channel	9262	
Measured 1g SAR (W/kg) 0.315		Measured 1g SAR (W/kg) 0.185		Measured 1g SAR (W/kg)	0.176	
Average Value of Ti	me Sweep (W/kg)	Average Value of Ti	ime Sweep (W/kg)	Average Value of Time Sweep (W/kg)		
Auto-tune (State 112)	0.394	Auto-tune (State 114)	0.221	Auto-tune (State 19)	0.189	
Default (State 0)	0.387	Default (State 0)	0.191	Default (State 0)	0.184	
State 0	0.387	State 4	0.163	State 2	0.181	
State 6	0.283	State 9	0.095	State 10	0.186	
State 39	0.327	State 40	0.056	State 19	0.187	
State 58	0.295	State 79	0.106	State 49	0.183	
State 94	0.236	State 107	0.052	State 80	0.184	
State 104	0.390	State 114	0.241	State 108	0.180	
State 112	0.389	State 118	0.107	State 119	0.182	

Table 13-2 LTE Supplemental Head SAR Data

				Supplemental F	lead SAR Data					
LTE	B12	LTE B13		LTE	LTE B26		B66	LTE	B25	
QPSK, 10 MHz Bandwidth, 1 RB, 0 RB		QPSK, 10 MHz Band	QPSK, 10 MHz Bandwidth, 1 RB, 25 RB		QPSK, 15 MHz Bandwidth, 1 RB, 36 RB		QPSK, 20 MHz Bandwidth, 1 RB, 0 RB		QPSK, 20 MHz Bandwidth, 1 RB, 0 RB	
Off	set	Off	set	Off	set	Off	set	Off	set	
Test Position	Left Cheek	Test Position	Right Cheek	Test Position	Right Cheek	Test Position	Left Cheek	Test Position	Left Cheek	
Frequency (MHz)	707.50	Frequency (MHz)	782.00	Frequency (MHz)	831.50	Frequency (MHz)	1770.00	Frequency (MHz)	1860.00	
Channel	23095	Channel	23230	Channel	26865	Channel	132572	Channel	26140	
Measured 1g SAR	0.000	Measured 1g SAR	0.040	Measured 1g SAR	0.044	Measured 1g SAR	0.404	Measured 1g SAR	0.195	
(W/kg)	0.099	(W/kg)	0.219	(W/kg)	0.244	(W/kg)	0.184	(W/kg)	0.195	
Average Value of T	îme Sweep (W/kg)	Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		
Auto-tune (State 104)	0.129	Auto-tune (State 104)	0.271	Auto-tune (State 112)	0.307	Auto-tune (State 26)	0.188	Auto-tune (State 15)	0.150	
Default (State 0)	0.126	Default (State 0)	0.284	Default (State 0)	0.306	Default (State 0)	0.164	Default (State 0)	0.133	
State 7	0.053	State 8	0.158	State 11	0.076	State 12	0.034	State 14	0.131	
State 15	0.063	State 29	0.159	State 19	0.171	State 26	0.210	State 15	0.125	
State 46	0.027	State 47	0.079	State 50	0.043	State 51	0.008	State 25	0.069	
State 64	0.000	State 65	0.222	State 62	0.032	State 54	0.210	State 53	0.123	
State 85	0.074	State 86	0.125	State 89	0.057	State 69	0.057	State 73	0.085	
State 104	0.126	State 104	0.285	State 110	0.199	State 90	0.016	State 83	0.134	
State 112	0.125	State 113	0.169	State 112	0.306	State 117	0.048	State 92	0.120	

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 05 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 95 of 107

Table 13-3 NR Supplemental Head SAR Data

NR Supplemental Head SAR Data								
	Supplemental H	lead SAR Data						
NR Ba	and n5	NR Band n66						
DFT-s-OFDM QPSK,	20 MHz Bandwidth, 1	DFT-s-OFDM QPSK	, 20 MHz Bandwidth,					
RB, 53 R	RB Offset	50 RB, 28 RB Offset						
Test Position	Right Cheek	Test Position	Left Cheek					
Frequency (MHz)	836.50	Frequency (MHz)	1770.00					
Channel	167300	Channel	354000					
Measured 1g SAR	0.400	Measured 1g SAR	0.044					
(W/kg)	0.198	(W/kg)	0.244					
Average Value of T	īme Sweep (W/kg)	Average Value of T	ime Sweep (W/kg)					
Auto-tune (State 112)	0.205	Auto-tune (State 26)	0.263					
Default (State 0)	0.225	Default (State 0)	0.263					
State 17	0.165	State 18	0.289					
State 26	0.120	State 26	0.263					
State 42	0.165	State 30	0.281					
State 56	0.136	State 33	0.285					
State 74	0.032	State 57	0.302					
State 95	0.140	State 77	0.019					
State 112	0.205	State 96	0.197					

FCC ID: A3LSMS901E	Proud to be post of @ element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 00 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 96 of 107

Table 13-4 UMTS Supplemental Body SAR Data

		owns Supplement		1	1	
		Supplemental E	Body SAR Data			
UMT	S B5	UMT	S B4	UMTS B2		
RN	RMC		IC	RMC		
Test Position	Back	Test Position	Bottom	Test Position	Bottom	
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	
Frequency (MHz)	846.60	Frequency (MHz)	1732.40	Frequency (MHz)	1880.00	
Channel	4233	Channel	1412	Channel	9400	
Measured 1g SAR (W/kg) 0.588		Measured 1g SAR (W/kg) 0.700		Measured 1g SAR (W/kg)	0.689	
Average Value of T	īme Sweep (W/kg)	Average Value of T	īme Sweep (W/kg)	Average Value of Time Sweep (W/kg)		
Auto-tune (State 112)	0.849	Auto-tune (State 26)	0.837	Auto-tune (State 17)	0.773	
Default (State 0)	0.864	Default (State 0)	0.690	Default (State 0)	0.763	
State 1	0.848	State 21	0.565	State 17	0.709	
State 20	0.455	State 26	0.810	State 22	0.626	
State 34	0.347	State 35	0.594	State 38	0.392	
State 59	0.525	State 60	0.718	State 61	0.718	
State 81	0.674	State 82	0.336	State 72	0.29	
State 98	0.562	State 99	0.329	State 84	0.379	
State 112	0.865	State 111	0.433	State 100	0.333	

FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 97 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 97 01 107

Table 13-5 LTE Supplemental Body SAR Data

	ETE dappiemental Body OAN Bata								
				Supplemental I	Body SAR Data				
LTE	B12	LTE	B13	LTE B26		LTE B66		LTE B25	
QPSK, 10 MHz Ban	dwidth, 1 RB, 0 RB	, 0 RB QPSK, 10 MHz Bandwidth, 1 RB, 25 RB QPSK, 15 MHz Bandwidth, 1 RB, 36		dwidth, 1 RB, 36 RB	QPSK, 20 MHz Ban	dwidth, 1 RB, 50 RB	QPSK, 20 MHz Bandwidth, 1 RB, 0 RB		
Offs	set	Off	set	Off	set	Off	set	Offs	set
Test Position	Back	Test Position	Back	Test Position	Back	Test Position	Bottom	Test Position	Bottom
Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm	Spacing	10 mm
Frequency (MHz)	707.50	Frequency (MHz)	782.00	Frequency (MHz)	831.50	Frequency (MHz)	1720.00	Frequency (MHz)	1882.50
Channel	23095	Channel	23230	Channel	26865	Channel	132072	Channel	26365
Measured 1g SAR (W/kg)	0.248	Measured 1g SAR (W/kg)	0.399	Measured 1g SAR (W/kg)	0.469	Measured 1g SAR (W/kg)	0.697	Measured 1g SAR (W/kg)	0.695
Average Value of T	ime Sweep (W/kg)	Average Value of T	ime Sweep (W/kg)	Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)		Average Value of Time Sweep (W/kg)	
Auto-tune (State 104)	0.374	Auto-tune (State 104)	0.610	Auto-tune (State 2)	0.743	Auto-tune (State 15)	0.780	Auto-tune (State 20)	0.738
Default (State 0)	0.368	Default (State 0)	0.609	Default (State 0)	0.698	Default (State 0)	0.636	Default (State 0)	0.755
State 5	0.253	State 3	0.605	State 2	0.717	State 15	0.857	State 3	0.733
State 15	0.184	State 13	0.344	State 14	0.438	State 22	0.457	State 16	0.754
State 27	0.215	State 28	0.327	State 31	0.355	State 32	0.745	State 20	0.738
State 66	0.177	State 45	0.327	State 48	0.236	State 49	0.069	State 24	0.395
State 87	0.082	State 67	0.362	State 70	0.377	State 71	0.238	State 44	0.23
State 102	0.014	State 88	0.114	State 91	0.171	State 97	0.428	State 55	0.693
State 104	0.369	State 104	0.609	State 93	0.297	State 101	0.201	State 63	0.552
State 105	0.245	State 106	0.255	State 109	0.525	State 116	0.77	State 78	0.399

Table 13-6 NR Supplemental Body SAR Data

NR Supplemental Body SAR Data						
Supplemental Body SAR Data						
NR Ba	and n5	NR Band n66				
DFT-OFDM QPSK, 2	20 MHz Bandwidth, 1	DFT-OFDM QPSK, 2	0 MHz Bandwidth, 50			
RB, 53 F	RB Offset	RB, 28 R	RB Offset			
Test Position	Back	Test Position	Bottom			
Spacing	10 mm	Spacing	10 mm			
Frequency (MHz)	836.50	Frequency (MHz)	1770.00			
Channel	167300	Channel	354000			
Measured 1g SAR (W/kg)	0.440	Measured 1g SAR (W/kg)	1.000			
Average Value of T	īme Sweep (W/kg)	Average Value of Time Sweep (W/kg)				
Auto-tune (State 2)	0.517	Auto-tune (State 13)	1.020			
Default (State 0)	0.523	Default (State 0)	0.858			
State 1	0.526	State 13	1.020			
State 2	0.517	State 15	0.984			
State 33	0.277	State 18	0.938			
State 36	0.106	State 23	0.976			
State 43	0.394	State 26	0.858			
State 47	0.214	State 37	0.954			
State 68	0.393	State 52	0.883			
State 75	0.053	State 54	0.918			
State 102	0.038	State 76	0.139			
State 112	0.535	State 103	0.052			
State 114	0.298	State 115	0.560			

FCC ID: A3LSMS901E	Poud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 00 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 98 of 107

13.1 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. When ULCA is active, the linearity between the Power Class 2 with ULCA active and Power Class 3 with ULCA active SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes was < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

Table 13-7
LTE Band 41 Head Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2		
Maximum Allowed Output Power (dBm)	25.0	26.5		
Measured Output Power (dBm)	24.72	26.31		
Measured SAR (W/kg)	0.055	0.049		
Measured Power (mW)	296.48	427.56		
Duty Cycle	63.3%	43.3%		
Frame Averaged Output Power (mW)	187.67	185.13		
% deviation from expected linearity		-9.69%		

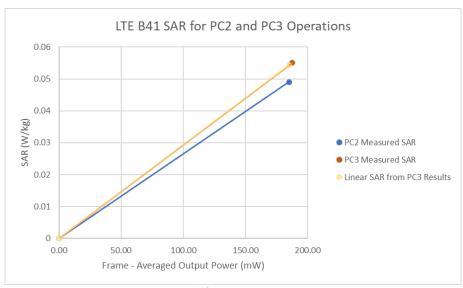


Figure 13-1 LTE Band 41 Head Linearity

FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dags 00 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 99 of 107

Table 13-8 LTE Band 41 Body-Worn Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	25.0	26.5
Measured Output Power (dBm)	24.72	26.31
Measured SAR (W/kg)	0.181	0.186
Measured Power (mW)	296.48	427.56
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	187.67	185.13
% deviation from expected linearity		4.17%

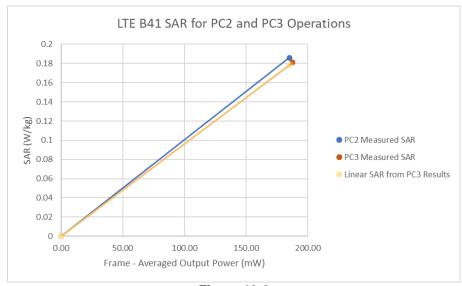


Figure 13-2 LTE Band 41 Body-Worn Linearity

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 100 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 100 01 107

Table 13-9 LTE Band 41 Hotspot Linearity Data

	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	23.0	23.0
Measured Output Power (dBm)	22.81	22.27
Measured SAR (W/kg)	0.461	0.306
Measured Power (mW)	190.99	168.66
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	120.89	73.03
% deviation from expected linearity		9.88%

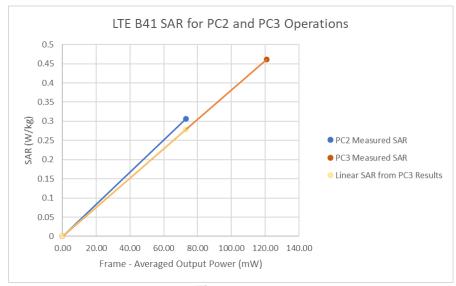


Figure 13-3 LTE Band 41 Hotspot Linearity

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 101 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 101 01 107

Table 13-10 LTE Band 41 Phablet Linearity Data

		, , , , , , , , , , , , , , , , , , , ,
	LTE Band 41 PC3	LTE Band 41 PC2
Maximum Allowed Output Power (dBm)	23.0	23.0
Measured Output Power (dBm)	22.83	22.40
Measured SAR (W/kg)	1.310	0.874
Measured Power (mW)	191.87	173.78
Duty Cycle	63.3%	43.3%
Frame Averaged Output Power (mW)	121.45	75.25
% deviation from expected linearity		7.69%

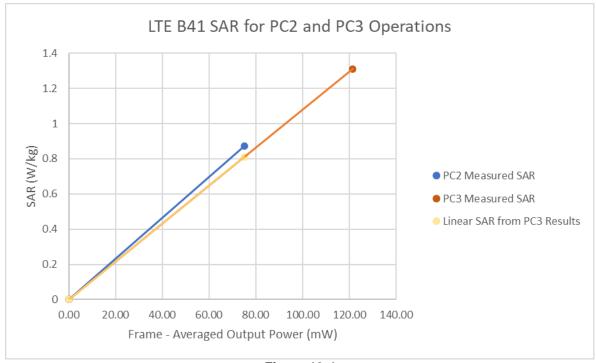


Figure 13-4 LTE Band 41 Phablet Linearity

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 102 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Fage 102 01 107

REV 21.4 M

Manufacturer Agilent	Model	Description (9kHz-2.9GHz) Spectrum Analyzer	Cal Date	Cal Interval	Cal Due	Serial Number 3051A00187
Agilent	85033E	3.5mm Standard Calibration Kit	7/7/2021	Annual	7/7/2022	MY53402352
Agilent Agilent	E4438C E4438C	ESG Vector Signal Generator ESG Vector Signal Generator	12/14/2020 5/6/2021	Biennial Annual	12/14/2022 5/6/2022	MY42082385 MY42082659
Agilent Agilent	E4438C E4432B	ESG Vector Signal Generator ESG-D Series Signal Generator	9/8/2020 2/24/2021	Biennial Annual	9/8/2022 2/24/2022	MY45090700 US40053896
Agilent Agilent	N5182A N5182A	MXG Vector Signal Generator MXG Vector Signal Generator	6/21/2021 6/15/2021	Annual Annual	6/21/2022 6/15/2022	MY47420603 MY47420800
Agilent Agilent	8753ES 8753ES	S-Parameter Vector Network Analyzer S-Parameter Vector Network Analyzer	12/15/2020 2/2/2021	Annual Annual	12/15/2021 2/2/2022	MY40003841 US39170122
Agilent Agilent	E5515C E5515C	Wireless Communications Test Set Wireless Communications Test Set	2/4/2021 2/6/2021	Annual Annual	2/4/2022 2/6/2022	GB43193563 GB43304278
Agilent Agilent	E5515C N4010A	Wireless Communications Test Set Wireless Connectivity Test Set	5/6/2021 N/A	Annual N/A	5/6/2022 N/A	GB44400860 GB46170464
Amplifier Research Amplifier Research	1551G6 1551G6	Amplifier Amplifier	CBT CBT	N/A N/A	CBT CBT	353317 353468
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	353469
Amplifier Research Amplifier Research	15S1G6 15S1G6	Amplifier Amplifier	CBT	N/A N/A	CBT CBT	433972 433974
Amplifier Research Amplifier Research	15S1G6 15S1G6	Amplifier Amplifier	CBT CBT	N/A N/A	CBT CBT	433976 433978
Anritsu Anritsu	ML2496A ML2496A	Power Meter Power Meter	3/3/2021 4/21/2021	Annual Annual	3/3/2022 4/21/2022	1306009 1351001
Anritsu Anritsu	MA2411B MA2411B	Pulse Power Sensor Pulse Power Sensor	12/18/2020 3/9/2021	Annual Annual	12/18/2021 3/9/2022	1126066 1207470
Anritsu Anritsu	MT8821C MT8821C	Radio Communication Analyzer Radio Communication Analyzer	4/16/2021 3/23/2021	Annual Annual	4/16/2022 3/23/2022	6200901190 6201144418
Anritsu Anritsu	MT8821C MT8821C	Radio Communication Analyzer Radio Communication Analyzer	2/1/2021	Annual	2/1/2022 4/14/2022	6201664756 6261895213
Anritsu Anritsu	MT8821C MT8821C	Radio Communication Analyzer Radio Communication Analyzer	3/2/2021 7/18/2021	Annual Annual	3/2/2022 7/18/2022	6262044715 6262150047
Anritsu Anritsu	MA24106A	USB Power Sensor USB Power Sensor	3/2/2021	Annual Annual	3/2/2022	1244524
Anritsu	MA24106A	USB Power Sensor	1/15/2021 3/3/2021	Annual	1/15/2022 3/3/2022	1344556
Anritsu Anritsu	MA24106A MA24106A	USB Power Sensor USB Power Sensor	5/17/2021 1/15/2021	Annual Annual	5/17/2022 1/15/2022	1349501 1349503
Anritsu Anritsu	MA24106A MA24106A	USB Power Sensor USB Power Sensor	3/2/2021 6/29/2021	Annual Annual	3/2/2022 6/29/2022	1349509 1349513
Anritsu Anritsu	MA24106A MA24106A	USB Power Sensor USB Power Sensor	5/3/2021 6/25/2021	Annual Annual	5/3/2022 6/25/2022	1349514 1520504
Anritsu COMTech	MT8862A AR85729-5	Wireless Connectivity Test Set Solid State Amplifier	10/29/2020 CBT	Annual N/A	10/29/2021 CBT	6261782395 M1SSA00-009
COMTECH Control Company	AR85729-5/57598 4352	Solid State Amplifier Long Stem Thermometer	CBT 1/24/2020	N/A Biennial	CBT 1/24/2022	M3W1A00-1002 200043588
Control Company Control Company	4352 4352	Long Stem Thermometer Long Stem Thermometer	1/24/2020	Biennial Biennial	1/24/2022 1/24/2022	200043634 200043644
Control Company	4352 4352 4352	Long Stem Thermometer	1/24/2020	Biennial Biennial	1/24/2022	200043647
Control Company Control Company	4352	Long Stem Thermometer Long Stem Thermometer	1/24/2020 5/16/2020	Biennial	1/24/2022 5/16/2022	200294409
Control Company Control Company	4352 4352	Long Stem Thermometer Long Stem Thermometer	5/16/2020 5/16/2020	Biennial Biennial	5/16/2022 5/16/2022	200294416 200294430
Control Company Control Company	4352 4352	Long Stem Thermometer Long Stem Thermometer	5/16/2020 5/16/2020	Biennial Biennial	5/16/2022 5/16/2022	200294436 200294567
Control Company Control Company	4352 4040	Long Stem Thermometer Therm./ Clock/ Humidity Monitor	5/16/2020 2/17/2020	Biennial Biennial	5/16/2022 2/17/2022	200294604 200113269
Control Company Control Company	4040 4040	Therm./ Clock/ Humidity Monitor Therm./ Clock/ Humidity Monitor	2/17/2020 3/6/2020	Biennial Biennial	2/17/2022 3/6/2022	200113274 200170289
Control Company Control Company	4040 4040	Therm./ Clock/ Humidity Monitor Therm./ Clock/ Humidity Monitor	3/6/2020 3/6/2020	Biennial Biennial	3/6/2022 3/6/2022	200170296 200170313
Insize Keysight	1108-150 7770	Digital Caliper Dual Directional Coupler	1/17/2020 CBT	Biennial N/A	1/17/2022 CRT	409193536 MV52180215
Keysight Technologies Keysight Technologies	N67058 N9020A	DC Power Analyzer MXA Signal Analyzer	5/5/2021 2/24/2021	Triennial Annual	5/5/2024	MY53004059 MY48010233
MCL MiniCircuits	BW-N6WS+ VLF-6000+	6dB Attenuator Low Pass Filter	CBT	N/A N/A	2/24/2022 CBT CBT	1139 N/A
MiniCircuits MiniCircuits	VLF-6000+ VLF-6000+ SLP-2400+	Low Pass Filter Low Pass Filter	CBT	N/A	CBT	N/A
MITTERCORES				N/A	CRI	R8979500903
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits Mini-Circuits Mini-Circuits	BW-N20W5+ NLP-1200+ NLP-2950+	Low Pass Filter DC to 1000 MHz Low Pass Filter DC to 2700 MHz	CBT CBT	N/A N/A N/A	CBT CBT CBT	N/A N/A N/A
Mini-Circuits Mini-Circuits Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT CBT CBT	N/A
Mini-Circuits Mini-Circuits	NLP-1200+ NLP-2950+ BW-N20W5	Low Pass Filter DC to 1000 MHz Low Pass Filter DC to 2700 MHz Power Attenuator	CBT CBT	N/A N/A N/A	CBT CBT CBT	N/A N/A 1226
Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Narda	NLP-1200+ NLP-2950+ BW-N20W5 TVA-11-422 4014C-6	Low Pass Filter DC to 1000 MHz Low Pass Filter DC to 2700 MHz Power Attenuator RF Power Amp 4 - 8 GHz SMA 6 dB Directional Coupler	CBT CBT CBT CBT CBT	N/A N/A N/A N/A	CBT CBT CBT CBT CBT	N/A N/A 1226 QA1303002 N/A
Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Narda Narda Narda Pasternack Pasternack	NLP-1200+ NLP-2950+ BW-N20W5 TVA-11-422 4014C-6 BW-S3W2 4772-3 PE2208-6 PE2209-10	Low Pass Filter DC to 1000 MPs Low Pass Filter DC to 2000 MPs Power Attenuator RF Power Amp 4 + 8 GHz MA 6 dis Directional Coupler Attenuator (368) Attenuator (368) Bidirectional Coupler Bidirectional Coupler	CBT	N/A N/A N/A N/A N/A N/A N/A N/A	CBT	N/A N/A 1226 QA 1303002 N/A 120 9405 N/A N/A
Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Narda Narda Narda Pasternack Pasternack Pasternack Pasternack	NLP-1200+ NLP-7550+ BW-N20W5 TVA-11-422 4014C-6 BW-S3W2 4772-3 PE2208-6 PE2209-10 NC-100	Low Pass Filter CC to 1200 Metr Low Pass Filter CC to 2700 Metr Power Attenuator B Power Attenuator B Power Attenuator B Power Anno Attenuator (188) Attenuator (188) Biorrectional Coupler Biorrectional Coupler Biorrectional Coupler Torque Wirench Torque Wirench Torque Wirench	CBT	N/A	CBT	N/A N/A 1226 QA1303002 N/A 120 9406 N/A N/A 1445 N/A
Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Narda Narda Narda Pasternack Pasternack	NLP-1200+ NLP-2550+ BW-N20W5 TVA-11-422 4014C-6 BW-53W2 4772-3 PE2208-6 PE2208-10 NC-100 NC-100 NC-100 NC-100	Low Pass Filter Cf to 1000 Met Low Pass Filter Cf to 1000 Met Power Attenuator BF Power Ann 4 - 8 GHz SMA 6 dB (Directional Coupler Attenuator (188) Attenuator (188) Bidirectional Coupler Bidirectional Coupler Bidirectional Coupler	CBT	N/A N/A N/A N/A N/A N/A N/A N/A	CBT	N/A N/A N/A 1226 QA3303002 N/A 120 9406 N/A N/A 1445 N/A N/A
Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Narda Narda Narda Pasternack	NLP-1200+ NLP-2950+ RVP-N20W5 TVA-11-422 4014-C-6 BW-53W2 4772-3 FP2208-6 PE2209-10 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100	(on Pass Titles Cf. to 1900 Mey to Pass Titles Cf. to 1900 Mey Power Attendable Power Attendable 4 - 8 09 to 1904 And Discount Conference A 19 09 to 1904 And Discount Conference Attendable (1888) Attendable (1888) Attendable (1888) Attendable (1888) Topique Wondch	CBT	N/A	CBT	N/A N/A N/A 1226 QA1903002 N/A 120 9405 N/A N/A 1445 N/A N/A N/A N/A N/A N/A
Mni-Circuit Mni-Circuit Mni-Circuit Mni-Circuit Mni-Circuit Narda Narda Narda Narda Narda Patternack Patternack Patternack Patternack Patternack Patternack Patternack Robodo & Schwarz Robodo & Schwarz Robodo & Schwarz	NIP-1200- NIP-1200- SW-N2005 SW-N2005 FVA-13-02 4014-C-6 BW-SW/2 FE209-10 NC-10	see year 18te CC to 100 MeV. Low Year 18te CC to 100 MeV. Power Affective CC 1700 MeV. Power Affective CC 1700 MeV. 4 - 5 OW SM AC Biometrat Couper 4 - 5 OW SM AC Biometrat Couper Affective CC 100 MeV. Topics Western T	CST	N/A	CBT	N/A N/A N/A 1226 QA1303002 N/A 120 9405 N/A N/A 1445 N/A N/A N/A 1445 147 147 147 147 147 147 147 147 147 147
Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Mini-Circuits Narda Narda Narda Pasternack	NLP-1200+ NLP-2950+ RVP-N20W5 TVA-11-422 4014-C-6 BW-53W2 4772-3 FP2208-6 PE2209-10 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100	(on Pass Titles Cf. to 1900 Mey to Pass Titles Cf. to 1900 Mey Power Attendable Power Attendable 4 - 8 09 to 1904 And Discount Conference A 19 09 to 1904 And Discount Conference Attendable (1888) Attendable (1888) Attendable (1888) Attendable (1888) Topique Wondch	CBT	N/A	CBT	N/A N/A N/A 1226 QA1903002 N/A 120 9406 N/A N/A 1445 N/A N/A N/A N/A N/A N/A N/A N/A
Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Nareda Nareda Nareda Nareda Pasternack Referenack R	NIP-1200- NIP-1200- SW-N2005 SW-N2005 FVA-13-02 4014-C-6 BW-SW/2 FE209-10 NC-10	Lee Past Titler CC to 1000 Medic Lear Past Titler CC to 1000 Medic Lear Past Titler CC to 1000 Medic Prover Attenuator Prover Attenuator Prover Attenuator Prover Appl Country Attenuator Califi Bell Attenuator Califi Topica Wisson Topica Wisso	CST	N/A	CBT	N/A N/A N/A 1226 QA1303002 N/A 120 9405 N/A N/A 1445 N/A N/A N/A 1445 147 147 147 147 147 147 147 147 147 147
Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Nareds Nareds Nareds Nareds Nareds Pasternack Sociolo S. Schwarz Robelo B. Schwarz Robelo B	NIP.1309- NIP.1309- NIP.1309- SW-N10WS SW-N10WS TVA.11-422 4014C-6 8W-SW2 4772-3 PF2209-10 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 NC-100 CM-WS00 CM	see year 1884 CK is 1000 Mel. Isan Yan 1884 CK is 1000 Mel. Isan Yan 1884 CK 2700 Mel. Isan Yan 1884 CK 2700 Mel. A 1500 Mel A Chineston County Alternative Child Toppe Westeh Toppe Westeh Toppe Westeh Toppe Westeh Toppe Westeh Alternative Child A	CBT	N/A	CBT	N/A N/A N/A 1226 OA1301001 1226 OA1301001 1200 OA1301001 1200 N/A N/A N/A N/A N/A N/A N/A 1445 N/A N/A 1485 1286 1286 1286 1286 161602 16162
Meni-Circuits Pasternack Pasternack Pasternack Pasternack Pasternack Pasternack Pasternack Pasternack Pasternack Robine & Schwarz Robine &	NIP-1309- NIP-1309- NIP-1309- SW-N20WS SW-N20WS TVA-11-422 4014-C-6 BW-SW2 4772-3 PF2208-10 NC-1000 NC	see year 1884 CK is 100 MeV. Lew Year 1884 CK is 100 MeV. 1 See Year 1884 CK is 100 MeV. 4 - 8 Or SS Me 48 Oncessar Couper 4 - 8 Or SS Me 48 Oncessar Couper 4 - 8 Or SS Me 48 Oncessar Couper Adstructed CABI Bellevia Cabinet CABI Adstructed CABINET Adstructed CA	CBT	N/A	CBT	N/A N/A N/A 1226 QA1393020 QA1393020 QA1393020 N/A 120 SA05 N/A N/A N/A N/A N/A N/A N/A N/A N/A 11147 12653 166948 166948 161662 161662 1034
Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Meni-Circuits Nuccia Meni-Circuits Nuccia Pasternack Paster	NIP-1209- NIP-12	see has Titles CE to 100 Mells Law has Titles CE to 100 Mells Law has Titles CE 100 Mells Flower Attenuates Power Attenuates 4 - 6 ON SM AC Monthand Coupler 4 - 6 ON SM AC Monthand Coupler Attenuates (1889) Bellinstein Coupler Bellinstein Coupler Bellinstein Coupler Bellinstein Coupler Topique Wesselt Mells Communication Tester Webbald College Communication Tester Webbald College Communication Tester Webbald Rabig Communication Tester Webbald Rabig Communication Tester Webbald Rabig Communication Tester Webbald Rabig Communication Tester Typide Mell Mill Oppique BE Mell SAM Stoppie	CBT	N/A	CBT	N/A N/A N/A 1226 QA1390302 QA1390302 JD0
Menic Grouts Menic Grouts Menic Grouts Menic Grouts Menic Grouts Menic Grouts Rusch	HIP-1209- HIP-2009- BW-N20W5 FW-N20W5 FW-N20W5 FW-N20W5 FP2209-6 HIP-2209-6 H	see year 18th CE is 1800 Mel. Lear Part 18th CE is 1800 Mel. Lear Part 18th CE IS 7900 Mel. Part 25th CE 7900 Mel. A 18 000 Mel All Stortcolor Couley Abstractor 1889 Abstract	CBT	N/A	CBT	N/A N/A N/A 1226 N/A 1236 N/A 1226 N/A 120 N/A 120 N/A 120 N/A 120 N/A 120 N/A
Mine Corputs Mone Mone Mone Mone Mone Mone Mone Mone	MIP - 1000+ MIP -	see year 18te CE to 100 MeV. Lee Year Silver CE 2700 MeV. Towar Alternative Prover Alternative Anti-Commission Silver Ce 100 MeV. All 500 SM AC Silver Ce 100 MeV. Alternative CE 100 MeV. Before CE 100 MeV. Before CE 100 MeV. Before CE 100 MeV. Before CE 100 MeV. Torque Westeh. Torque Westeh.	CBT	NIA	CBT	N/A N/A N/A N/A 1226 A1303000 N 1307 9405 N 1445 N
Med Cross Med	M(+) 1000+	see year 18te CE to 1800 Mel. Lew Year 18te CE to 1800 Mel. Lew Year 18te CE 1800 Mel. 4 - 6 DO SA Mel Bir Olivectoral Coupler 4 - 6 DO SA Mel Bir Olivectoral Coupler Abstractor CEBB Bir Olivectoral Coupler Abstractor CEBB Bir Olivectoral Coupler Bir Olivectoral	CRT	N/A	C81	N/A
Med Cross Med Cr	MIP 1-3009 WA MONTO	see has Titles CE to 1000-Medi. Low has Titles CE to 1000-Medi. Low has Titles CE 1000-Medi. Power Afficience of Power Afficie	CRT	N/A	CBT	N/A N/A N/A N/A 1226 N/A 1236 N/A 1236 N/A 1246 N/A 126 N/A 126 N/A
Men Corputs Men Men Corputs Men Men Corputs Men	MIR-13001	see year 18te CS to 1800 Med. Lee Year SHE VEC CS 2000 Med. Lee Year SHE VEC CS 2000 Med. A 5 00 Med Med Stortcolar County A 5 00 Med Med Stortcolar County All sounds of Med Stortcolar County All sounds of Med Stortcolar County Bell sounds of Med Stortcolar Stortcolar Stortcolar Stortcolar Stortcolar Med Stortcolar Stortcolar Med Stortcolar Stortcolar Med Stortcolar Stortcolar Stortcolar Med Stortcola	CRT	N/A	C8T	N/A N/A N/A N/A N/A 1226 N/A 1226 N/A
Men Corputs Men	MIR-13001 MIR-13	see year 18th CE is 1000 Med. Lear Year 18th CE is 1000 Med. Lear Year 18th CE 1000 Med. A 6 000 SM 44 Si Short-could Coupler A 8 000 SM 44 Si Short-could Coupler Torque Woundh	CRT	N/A	C8T	N/A N/A N/A N/A N/A 1228 N/A 1228 N/A 1228 N/A N/A 1248 N/A N/A N/A 12485 N/A
Menic Circuits Menic Menic Menic Menic Menic Menic Menic Pasternack Robota & Schwarz Menic & S	M(F) 3000 M 1000	see year 18th CE to 1000 MeV. Low Year 18th CE to 1000 MeV. Low Year 18th CE 1000 MeV. 4 - 6 DOS MAR 6 MeV. 4 - 6 DOS MAR 6 MeV. Assembler 15th Mev. Before control of the control o	CRT	HIA NIA NIA NIA NIA NIA NIA NIA NIA NIA N	C81	N/A
Men Corputs Men Men Corputs Men Men Corputs Men	MIR-1909	see year 18te CS to 1800 Med. Lee Pers 18te CS 1970 Med. Pers 2 Med. CS 1970 Med. 4 - 6 OO SM AND ED ACTION CONTROL OF A STATE Med. A 15 OO SM AND ED ACTION CONTROL OF A STATE MED. A 15 OO SM AND ED ACTION CONTROL OF A STATE MED. A 15 OO SM AND ED ACTION CONTROL OF A STATE MED. B MICHIGAN CONTROL OF A STATE MED. B MICHIGAN CONTROL OF A STATE MED. TORON WHICH. TORON WH	CRT	N/A	CBT	N/A
Men Corputs Men Men Corputs Men Men Corputs Men	MIR-13001	see year 1884 CK to 1800 Med. Lee Year SHE YEAR CK to 1800 Med. Lee Year SHE YEAR CK 1970 Med. A 1800 Med ARE OF 1800 Med. A 1800 Med ARE OF 1800 Med. ARE OF 1800 Med ARE OF 1800 Med. ARE OF 1800 Med ARE OF 1800 Med. ARE OF 1800 Med ARE OF 1800 Med. Bell Year OF 1800 Med. Bell Year OF 1800 Med. Topical Western Topica	CST	HIGA NICA NICA NICA NICA NICA NICA NICA NIC	CBT	\$\(\(\lambda \) \(\lambda \
Meni Circuits Me	MIR-1000+ MIR-10	see year 18te CE to 100 MeV. Lew Year 18te CE to 100 MeV. Lew Year 18te CE 100 MeV. 4 - 6 DOS Me AR 6 Monchant Coupler 4 - 6 DOS Me AR 6 Monchant Coupler 4 - 6 DOS Me AR 6 Monchant Coupler 4 - 6 DOS Me AR 6 Monchant Coupler Assembler 1588 Billionation Coupler Billionation Coup	CBT	N/A	C81	Ni/A
Menic Circuits Menic Menic Menic Menic Pasternack Pasternac	MIP 1-3009 MIP 1-	see year 18te CC 6s 100 MeV Lew Year 18te CC 6s 100 MeV Lew Year 18te CC 1070 MeV 4 - 6 00 MeV 5 - 6 00 MeV	CRI	Hyla N/A	CBT	Ni/A
Men Corputs Men Co	MIR-13001 MIR-13	see year 1884 CK to 1800 Mel. Lear Nest Merc CK 2000 Mel. Lear Nest Merc CK 2000 Mel. A 16 000 Mel CK 2000 Mel. Berlindricher (1888) Berlindricher (1888) Berlindricher (1888) Teiger Westeh Teiger	CBI	HIA NIA NIA NIA NIA NIA NIA NIA NIA NIA N	CBT	\$\(\(\lambda \) \(\lambda \
Men Corputs Men	MIR-13001 MIR-13	see year 18th CE is 1000 Med. Low Year SHOW CE 2070 Med. Low Year SHOW CE 2070 Med. A 6 000 SM A 6 Short-could Coupler Torque Wouch A 6 Short-could Short-could Coupler Medic Communication Short-could Coupler Medic Communication Short-could Short-coupler Medic Communication Short-could Short-coupler Medic Communication Short-could Short-coupler Medic Communication Sh	CRI	MIA NIA NIA NIA NIA NIA NIA NIA	CBT	\$\(\(\frac{1}{2} \) \(\frac{1} \) \(\frac{1} \) \(\frac{1}{2} \) \(\frac{1}{2}
Meni Circuist Me	MIR-1000+ MIR-10	see year 18th CE to 1800 Mel. Lew Year SHE CE to 1800 Mel. Lew Year SHE CE TO 2000 Mel. Lew Year SHE CE TO 2000 Mel. 4 - 8 DO SM AR ES MICHIGARI CAUSE ARTICLES SHE SHE SHE SHE SHE SHE SHE SHE SHE S	CRI	High N/A	CBT	Mi/A
Men Corputs Men Co	MIR-1909 MIR-19	see near titler DE to 100 Med. Lee Pers Micro CE 100 Med. Lee Pers Micro CE 100 Med. A 6 00 Med Cell Microsoft Country Berlin Cell Microsoft Country Berlin Cell Microsoft Country Berlin Cell Microsoft Country Berlin Cell Microsoft Country Topica Worch	CBI	M(A M(A	CBT	\$1/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N
Men Corputs Men Co	MIR-1000 MIR	see year 18th CE to 1800 Med. Lear Nest Med. CC 1970 Med. Lear Nest Med. CC 1970 Med. 4 - 6 00 Med. AE OF 1970 Med. 4 - 6 00 Med. AE OF 1970 Med. ABstractor 18th Office Med. AE OF 1970 Med. ABstractor 18th Office Med. AE OF 1970 Med. Berlindson 18th Office Med. AE OF 1970 Med. Berlindson 18th Office Med. AE OF 1970 Med. Topical Western. Topical Med. Topical Western. Topical W	CRI	HIGA NICA NICA NICA NICA NICA NICA NICA NIC	CBT	Mi/A
Minis Corquist Minis Min	MIR-13001 MIR-13	see year 18th CE to 1800 Mel. Lear Year 18th CE to 1800 Mel. Lear Year 18th CE O 2700 Mel. Prover Attendants An one of the CE of 2700 Mel. 4 - 6 000 Mel - 6 000 colored colored Antendard CEBB Antendard CEBB Antendard CEBB Antendard CEBB Temper Westerh Temper	CRI	HIGA NICA NICA NICA NICA NICA NICA NICA NIC	CBT	\$\(\(\frac{1}{2} \) \(\frac{1} \) \(\frac{1} \) \(\frac{1}{2} \) \(\frac{1}{2}
Menic Circuits Menic Menic Menic Menic Menic Residence Residence Residence Pasternack Pasternack Pasternack Pasternack Pasternack Pasternack Pasternack Pasternack Residence Residenc	MIR-1900 MIR	see year 18th CE to 1800 Mele Leavy No. 18th CE to 1800 Mele Leavy No. 18th CE 1800 Me	CRI	High N/A	CBT	Mi/A
Men Corputs Men Men Corputs Men Corputs Men Corputs Men Corputs Men Corputs Men Men Corputs Men	MIR-1909 MIR	see near titler Cit is 100 Med. Lear Part of Titler Cit is 100 Med. Lear Part of Titler Cit is 100 Med. An of the Cit is 100 Med. Frogram Weech. Toppe Weech. T	CBI	NIA	CBI	Mi/A

Note: all equipment was used solely within its respective calibration period.

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

		-		
FCC ID: A3LSMS901E	Proud to be part of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Page 103 of 107
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 103 01 107
021 PCTEST.				REV 21.4 M

© 2021 PCTEST.

a	b	С	d	e=	f	g	h =	i =	k
				f(d,k)			c x f/e	c x g/e	
	IEEE	Tol.	Prob.		Ci	Ci	1gm	10gms	
Uncertainty Component	1528 Sec.	(± %)	Dist.	Div.	1gm	10 gms	Ui	Ui	Vi
	000.						(± %)	(± %)	
Measurement System									
Probe Calibration	E.2.1	7	Ν	1	1	1	7.0	7.0	∞
Axial Isotropy	E.2.2	0.25	Ν	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	Ν	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.732	1	1	1.2	1.2	8
Linearity	E.2.4	0.3	Ν	1	1	1	0.3	0.3	8
System Detection Limits	E.2.4	0.25	R	1.732	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.732	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	Ν	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.732	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.732	1	1	1.5	1.5	8
RF Ambient Conditions - Noise	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.732	1	1	1.7	1.7	8
Probe Positioner Mechanical Tolerance		0.8	R	1.732	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom		6.7	R	1.732	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.732	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	Ν	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	Ν	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.732	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.732	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	8
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	Ν	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty		4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty		3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty		0.6	R	1.732	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values		5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values		5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - deviation from target values E.3.2 5.0 R 1.73 0.60 0.49 Combined Standard Uncertainty (k=1) RSS					1	12.2	12.0	191	
Expanded Uncertainty k=2					24.4	24.0			
(95% CONFIDENCE LEVEL)									

The above measurement uncertainties are according to IEEE Std. 1528-2013

FCC ID: A3LSMS901E	Poud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager
Document S/N:	Test Dates:	DUT Type:		Dogg 404 of 407
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 104 of 107

© 2021 PCTEST.

REV 21.4 M

16 CONCLUSION

16.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

	FCC ID: A3LSMS901E	PCTEST* Proud to be post of ® element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
	Document S/N:	Test Dates:	DUT Type:		Dogg 405 of 407	
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 105 of 107	
© 202	1 PCTEST.				REV 21.4 M	

09/11/2019
© 2021 PCTEST. All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contributions.

17 REFERENCES

- Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, Aug. 1996.
- ANSI/IEEE C95.1-2005, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, 2006.
- ANSI/IEEE C95.1-1992, American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3kHz to 300GHz, New York: IEEE, Sept. 1992.
- ANSI/IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave, New York: IEEE, December 2002.
- IEEE Standards Coordinating Committee 39 Standards Coordinating Committee 34 IEEE Std. 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
- NCRP, National Council on Radiation Protection and Measurements, Biological Effects and Exposure Criteria for RadioFrequency Electromagnetic Fields, NCRP Report No. 86, 1986. Reprinted Feb. 1995.
- T. Schmid, O. Egger, N. Kuster, Automated E-field scanning system for dosimetric assessments, IEEE Transaction on Microwave Theory and Techniques, vol. 44, Jan. 1996, pp. 105-113.
- [8] K. Pokovic, T. Schmid, N. Kuster, Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequencies, ICECOM97, Oct. 1997, pp. 1-124.
- [9] K. Pokovic, T. Schmid, and N. Kuster, E-field Probe with improved isotropy in brain simulating liquids, Proceedings of the ELMAR, Zadar, Croatia, June 23-25, 1996, pp. 172-175.
- [10] Schmid & Partner Engineering AG, Application Note: Data Storage and Evaluation, June 1998, p2.
- [11] V. Hombach, K. Meier, M. Burkhardt, E. Kuhn, N. Kuster, The Dependence of EM Energy Absorption upon Human Modeling at 900 MHz, IEEE Transaction on Microwave Theory and Techniques, vol. 44 no. 10, Oct. 1996, pp. 1865-1873.
- [12] N. Kuster and Q. Balzano, Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.
- [13] G. Hartsgrove, A. Kraszewski, A. Surowiec, Simulated Biological Materials for Electromagnetic Radiation Absorption Studies, University of Ottawa, Bioelectromagnetics, Canada: 1987, pp. 29-36.
- [14] Q. Balzano, O. Garay, T. Manning Jr., Electromagnetic Energy Exposure of Simulated Users of Portable Cellular Telephones, IEEE Transactions on Vehicular Technology, vol. 44, no.3, Aug. 1995.
- [15] W. Gander, Computermathematick, Birkhaeuser, Basel, 1992.
- [16] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, Numerical Recipes in C, The Art of Scientific Computing, Second edition, Cambridge University Press, 1992.
- [17] N. Kuster, R. Kastle, T. Schmid, Dosimetric evaluation of mobile communications equipment with known precision, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

	FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
	Document S/N:	Test Dates:	DUT Type:		Dogg 400 of 407	
	1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 106 of 107	
© 202	© 2021 PCTEST.					

- [18] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), Human Exposure to Electromagnetic Fields Highfrequency: 10kHz-300GHz, Jan. 1995.
- [19] Prof. Dr. Niels Kuster, ETH, Eidgenössische Technische Hoschschule Zürich, Dosimetric Evaluation of the Cellular Phone.
- [20] IEC 62209-1, Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to the ear (Frequency range of 300 MHz to 6 GHz), July 2016.
- [21] Innovation, Science, Economic Development Canada RSS-102 Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5, March 2015.
- [22] Health Canada Safety Code 6 Limits of Human Exposure to Radio Frequency Electromagnetic Fields in the Frequency Range from 3 kHz - 300 GHz, 2015
- [23] FCC SAR Test Procedures for 2G-3G Devices, Mobile Hotspot and UMPC Devices KDB Publications 941225, D01-D07
- [24] SAR Measurement Guidance for IEEE 802.11 Transmitters, KDB Publication 248227 D01
- [25] FCC SAR Considerations for Handsets with Multiple Transmitters and Antennas, KDB Publications 648474 D03-D04
- [26] FCC SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers, FCC KDB Publication 616217 D04
- [27] FCC SAR Measurement and Reporting Requirements for 100MHz 6 GHz, KDB Publications 865664 D01-D02
- [28] FCC General RF Exposure Guidance and SAR Procedures for Dongles, KDB Publication 447498, D01-D02
- [29] Anexo à Resolução No. 533, de 10 de Septembro de 2009.
- [30] IEC 62209-2, Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), Mar. 2010.

FCC ID: A3LSMS901E	Proud to be part of & element	SAR EVALUATION REPORT	SAMSUNG	Approved by: Quality Manager	
Document S/N:	Test Dates:	DUT Type:		Dage 407 of 407	
1M2109290114-01.A3L (Rev2)	10/08/21 - 12/14/21	Portable Handset		Page 107 of 107	