

APPENDIX D: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the tissue. The tissue was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity ϵ' can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r'\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

**Table D-I
Composition of the Tissue Equivalent Matter**

Frequency (MHz)	750	750	835	835	1750	1750	1900	1900	2450	2450	3500 - 5800	3500 - 5800
Tissue	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)												
Bactericide	See page 2-3	See page 2	0.1	0.1					See page 4		See page 5	See page 6
DGBE					47	31	44.92	29.44		26.7		
HEC			1	1								
NaCl			1.45	0.94	0.4	0.2	0.18	0.39		0.1		
Sucrose			57	44.9								
Polysorbate (Tween) 80												
Water			40.45	53.06	52.6	68.8	54.9	70.17		73.2		

FCC ID: A3LSMG970U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset	APPENDIX D: Page 1 of 6		

2 Composition / Information on ingredients

The Item is composed of the following ingredients:

H ₂ O	Water, 35 – 58%
Sucrose	Sugar, white, refined, 40 – 60%
NaCl	Sodium Chloride, 0 – 6%
Hydroxyethyl-cellulose	Medium Viscosity (CAS# 9004-62-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone, 0.1 – 0.7%

Relevant for safety; Refer to the respective Safety Data Sheet*.

Figure D-1
Composition of 750 MHz Head and Body Tissue Equivalent Matter

Note: 750MHz liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

Measurement Certificate / Material Test

Item Name	Body Tissue Simulating Liquid (MSL750V2)
Product No.	SL AAM 075 AA (Batch: 170608-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature 22°C
Test Date 20-Jun-17
Operator CL

Additional Information

TSL Density 1.212 g/cm³
TSL Heat-capacity 3.006 kJ/(kg*K)

f [MHz]	Measured			Target		Diff.to Target [%]	
	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
600	57.3	25.02	0.84	56.1	0.95	2.2	-12.2
625	57.1	24.67	0.86	56.0	0.95	1.9	-10.1
650	56.8	24.32	0.88	55.9	0.96	1.6	-8.0
675	56.6	24.02	0.90	55.8	0.96	1.3	-5.8
700	56.3	23.71	0.92	55.7	0.96	1.1	-3.8
725	56.1	23.48	0.95	55.6	0.96	0.8	-1.5
750	55.9	23.25	0.97	55.5	0.96	0.6	0.7
775	55.6	23.04	0.99	55.4	0.97	0.3	2.9
800	55.4	22.82	1.02	55.3	0.97	0.1	5.0
825	55.2	22.65	1.04	55.2	0.98	-0.1	6.3
838	55.1	22.56	1.05	55.2	0.98	-0.3	6.9
850	54.9	22.47	1.06	55.2	0.99	-0.4	7.5
875	54.7	22.34	1.09	55.1	1.02	-0.7	6.7
900	54.5	22.21	1.11	55.0	1.05	-0.9	5.9
925	54.3	22.08	1.14	55.0	1.06	-1.3	6.9
950	54.1	21.95	1.16	54.9	1.08	-1.6	7.9
975	53.8	21.86	1.19	54.9	1.09	-1.9	9.1
1000	53.6	21.76	1.21	54.8	1.10	-2.2	10.2

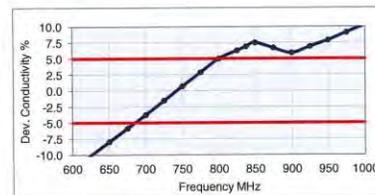
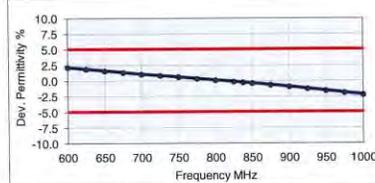


Figure D-2
750MHz Body Tissue Equivalent Matter

FCC ID: A3LSMG970U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset			APPENDIX D: Page 2 of 6

Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HSL750V2)
Product No.	SL AAH 075 AA (Batch: 170612-4)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	20-Jun-17
Operator	CL

Additional Information

TSL Density	1.284 g/cm ³
TSL Heat-capacity	2.701 kJ/(kg*K)

f [MHz]	Measured			Target		Diff. to Target [%]	
	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
600	45.6	22.97	0.77	42.7	0.88	6.7	-13.1
625	45.2	22.73	0.79	42.6	0.88	6.2	-10.6
650	44.9	22.49	0.81	42.5	0.89	5.6	-8.2
675	44.5	22.27	0.84	42.3	0.89	5.1	-5.8
700	44.2	22.05	0.86	42.2	0.89	4.6	-3.5
725	43.8	21.88	0.88	42.1	0.89	4.2	-1.0
750	43.5	21.72	0.91	41.9	0.89	3.8	1.4
775	43.2	21.55	0.93	41.8	0.90	3.4	3.7
800	42.9	21.38	0.95	41.7	0.90	2.9	6.0
825	42.6	21.24	0.97	41.6	0.91	2.4	7.5
838	42.5	21.17	0.99	41.5	0.91	2.2	8.2
850	42.3	21.09	1.00	41.5	0.92	2.0	8.9
875	42.0	20.98	1.02	41.5	0.94	1.2	8.3
900	41.7	20.87	1.05	41.5	0.97	0.5	7.7
925	41.5	20.76	1.07	41.5	0.98	0.0	8.7
950	41.2	20.64	1.09	41.4	0.99	-0.6	9.7
975	40.9	20.55	1.11	41.4	1.00	-1.1	10.9
1000	40.6	20.46	1.14	41.3	1.01	-1.7	12.1

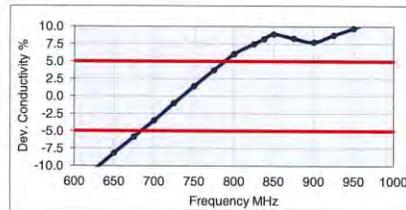
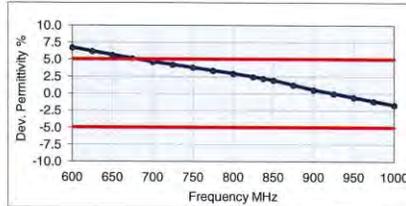


Figure D-3
750MHz Head Tissue Equivalent Matter

FCC ID: A3LSMG970U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset			APPENDIX D: Page 3 of 6

3 Composition / Information on ingredients

The Item is composed of the following ingredients:

Water	50 – 73 %	
Non-ionic detergents	25 – 50 %	polyoxyethylenesorbitan monolaurate
NaCl	0 – 2 %	
Preservative	0.05 – 0.1 %	Preventol-D7

Safety relevant ingredients:

CAS-No. 55965-84-9	< 0.1 %	aqueous preparation, containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone
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CAS-No. 9005-64-5	<50 %	polyoxyethylenesorbitan monolaurate
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According to international guidelines, the product is not a dangerous mixture and therefore not required to be marked by symbols.

Figure D-4
Composition of 2.4 GHz Head Tissue Equivalent Matter

Note: 2.4 GHz head liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

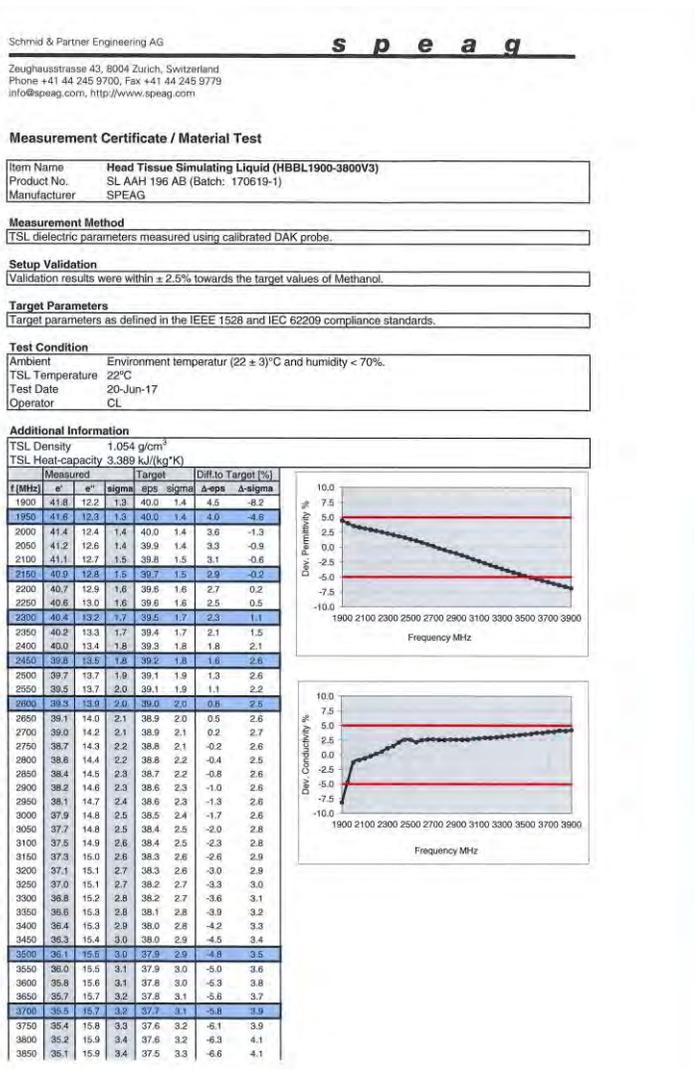


Figure D-5
2.4 GHz Head Tissue Equivalent Matter

FCC ID: A3LSMG970U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset			APPENDIX D: Page 4 of 6

2 Composition / Information on ingredients

The Item is composed of the following ingredients:

Water	50 – 65%
Mineral oil	10 – 30%
Emulsifiers	8 – 25%
Sodium salt	0 – 1.5%

Figure D-6

Composition of 3.5 – 5 GHz Head Tissue Equivalent Matter

Note: 3.5 – 5 GHz head liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speg.com, http://www.speg.com

Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HBBL3500-5900V5)
Product No.	SL AAH 502 AG (Batch: 170613-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient Environment temperature (22 ± 3)°C and humidity < 70%.
TSL Temperature 22°C
Test Date 20-Jun-17
Operator CL

Additional Information

TSL Density 0.985 g/cm³
TSL Heat-capacity 3.383 kJ/(kg·K)

f [MHz]	Measured			Target			Diff to Target [%]	
	ϵ'	ϵ''	sigma	eps	sigma	A-eps	A-sigma	
3400	39.6	15.03	2.84	38.0	2.81	1.5	-1.1	
3500	38.5	15.00	2.92	37.9	2.91	1.5	0.3	
3600	38.3	14.98	3.00	37.8	3.02	1.3	-0.5	
3700	38.2	14.96	3.08	37.7	3.12	1.3	-1.2	
3800	38.1	14.96	3.16	37.6	3.22	1.4	-1.9	
3900	38.0	14.95	3.24	37.5	3.32	1.4	-2.5	
4000	37.9	14.95	3.33	37.4	3.43	1.5	-2.8	
4100	37.8	14.96	3.41	37.2	3.53	1.5	-3.3	
4200	37.6	15.00	3.50	37.1	3.63	1.3	-3.6	
4300	37.5	15.05	3.60	37.0	3.73	1.3	-3.5	
4400	37.4	15.11	3.70	36.9	3.84	1.4	-3.5	
4500	37.2	15.18	3.80	36.8	3.94	1.1	-3.5	
4600	37.1	15.24	3.90	36.7	4.04	1.2	-3.5	
4700	37.0	15.29	4.00	36.6	4.14	1.2	-3.4	
4800	36.8	15.35	4.10	36.4	4.25	1.0	-3.4	
4900	36.8	15.35	4.14	36.4	4.30	1.1	-3.6	
4950	36.7	15.38	4.19	36.3	4.35	1.0	-3.6	
4980	36.6	15.39	4.24	36.3	4.40	0.9	-3.6	
5000	36.5	15.42	4.29	36.2	4.45	0.8	-3.6	
5050	36.5	15.43	4.34	36.2	4.50	0.9	-3.6	
5100	36.4	15.46	4.39	36.1	4.55	0.8	-3.6	
5150	36.3	15.48	4.43	36.0	4.60	0.7	-3.8	
5200	36.2	15.50	4.48	36.0	4.66	0.6	-3.8	
5250	36.1	15.53	4.54	35.9	4.71	0.5	-3.5	
5300	36.1	15.55	4.58	35.9	4.76	0.6	-3.7	
5350	36.0	15.56	4.63	35.8	4.81	0.5	-3.7	
5400	35.9	15.57	4.68	35.8	4.86	0.4	-3.7	
5450	35.9	15.59	4.73	35.7	4.91	0.6	-3.7	
5500	35.8	15.61	4.78	35.6	4.96	0.4	-3.7	
5550	35.7	15.65	4.83	35.6	5.01	0.3	-3.7	
5600	35.6	15.66	4.88	35.5	5.07	0.2	-3.7	
5650	35.6	15.70	4.93	35.5	5.12	0.4	-3.6	
5700	35.5	15.72	4.98	35.4	5.17	0.2	-3.6	
5750	35.4	15.76	5.04	35.4	5.22	0.1	-3.4	
5800	35.4	15.78	5.09	35.3	5.27	0.3	-3.4	
5850	35.3	15.81	5.14	35.3	5.34	0.0	-3.7	
5900	35.3	15.82	5.19	35.3	5.40	0.0	-3.9	

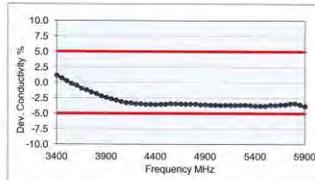
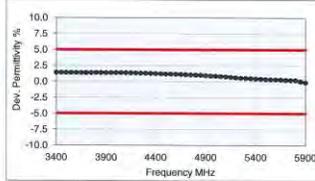


Figure D-7

3.5 – 5 GHz Head Tissue Equivalent Matter

FCC ID: A3LSMG970U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset			APPENDIX D: Page 5 of 6

3 Composition / Information on ingredients

The Item is composed of the following ingredients:

Water	60 – 80%
Esters, Emulsifiers, Inhibitors	20 – 40%
Sodium salt	0 – 1.5%

Figure D-8
Composition of 3.5 – 5 GHz Body Tissue Equivalent Matter

Note: 3.5 – 5 GHz Body liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 44 245 9700, Fax +41 44 245 9779
info@speag.com, http://www.speag.com

Measurement Certificate / Material Test

Item Name	Body Tissue Simulating Liquid (MBBL3500-5800V5)
Product No.	SL AAM 501 EA (Batch: 180423-2)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probes.

Setup Validation

Validation results were within ± 2.5% towards the target values of Methanol.

Target Parameters

Target parameters as defined in the KDB 865664 compliance standard.

Test Condition

Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	25-Apr-18
Operator	WM

Additional Information

TSL Density	0.996 g/cm ³
TSL Heat-capacity	3.765 kJ/(kg*K)

f [MHz]	Measured		Target		Diff.to Target [%]	
	ε'	ε''	eps	sigma	Δ-eps	Δ-sigma
3400	50.7	16.46	51.5	3.20	-1.5	-2.7
3500	50.5	16.56	51.3	3.31	-1.6	-3.1
3600	50.4	16.56	51.2	3.43	-1.5	-3.2
3700	50.3	16.62	51.1	3.55	-1.5	-3.6
3800	50.2	16.72	50.9	3.66	-1.4	-3.7
3900	50.1	16.81	50.8	3.78	-1.3	-3.5
4000	49.9	16.93	50.6	3.90	-1.5	-3.3
4100	49.8	17.05	50.5	4.01	-1.4	-3.1
4200	49.6	17.18	50.4	4.13	-1.5	-2.9
4300	49.5	17.32	50.2	4.25	-1.5	-2.5
4400	49.3	17.46	50.1	4.37	-1.6	-2.2
4500	49.2	17.59	50.0	4.48	-1.5	-1.8
4600	49.0	17.73	49.8	4.60	-1.7	-1.3
4700	48.8	17.86	49.7	4.72	-1.8	-1.0
4800	48.6	17.99	49.6	4.83	-1.9	-0.7
4850	48.5	18.05	49.5	4.89	-2.0	-0.4
4900	48.4	18.11	49.4	4.95	-2.1	-0.2
4950	48.3	18.17	49.4	5.01	-2.1	-0.1
5000	48.2	18.23	49.3	5.07	-2.2	0.1
5050	48.1	18.29	49.2	5.12	-2.3	0.3
5100	48.0	18.34	49.2	5.18	-2.3	0.3
5150	47.9	18.39	49.1	5.24	-2.4	0.6
5200	47.9	18.45	49.0	5.30	-2.3	0.8
5250	47.8	18.50	48.9	5.36	-2.3	0.8
5300	47.7	18.55	48.9	5.42	-2.4	1.0
5350	47.6	18.61	48.8	5.47	-2.5	1.2
5400	47.5	18.67	48.7	5.53	-2.5	1.4
5450	47.4	18.72	48.7	5.59	-2.6	1.6
5500	47.3	18.77	48.6	5.65	-2.7	1.8
5550	47.2	18.83	48.5	5.71	-2.8	1.8
5600	47.1	18.89	48.5	5.77	-2.8	2.0
5650	47.1	18.93	48.4	5.82	-2.7	2.1
5700	47.0	18.99	48.3	5.88	-2.8	2.3
5750	46.9	19.04	48.3	5.94	-2.6	2.5
5800	46.8	19.10	48.2	6.00	-2.9	2.7
5850	46.7	19.16	48.1	6.06	-3.0	2.8
5900	46.6	19.22	48.1	6.12	-3.0	3.2

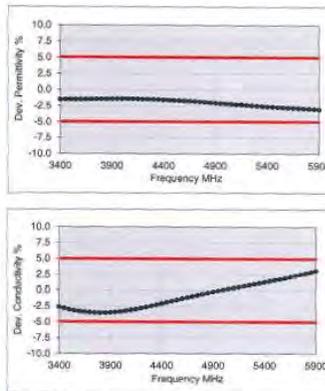


Figure D-9
3.5 – 5 GHz Body Tissue Equivalent Matter

FCC ID: A3LSMG970U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset			APPENDIX D: Page 6 of 6

APPENDIX E: SAR SYSTEM VALIDATION

Per FCC KDB Publication 865664 D02v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

Table E-1
SAR System Validation Summary – 1g

SAR System	Freq. (MHz)	Date	Probe SN	Probe Cal Point		Cond. (σ)	Perm. (εr)	CW VALIDATION			MOD. VALIDATION		
								SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
I	750	11/1/2018	7406	750	Head	0.898	42.449	PASS	PASS	PASS	N/A	N/A	N/A
L	835	11/12/2018	7308	835	Head	0.893	42.128	PASS	PASS	PASS	GMSK	PASS	N/A
M	1750	11/5/2018	3287	1750	Head	1.342	39.217	PASS	PASS	PASS	N/A	N/A	N/A
E	1900	5/22/2018	3213	1900	Head	1.447	38.909	PASS	PASS	PASS	GMSK	PASS	N/A
M	1900	11/5/2018	3287	1900	Head	1.43	39.014	PASS	PASS	PASS	GMSK	PASS	N/A
G	2300	8/8/2018	7410	2300	Head	1.701	40.133	PASS	PASS	PASS	N/A	N/A	N/A
G	2450	8/7/2018	7410	2450	Head	1.865	39.618	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
H	2450	8/8/2018	7409	2450	Head	1.844	40.474	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
G	2600	8/8/2018	7410	2600	Head	2.04	39.033	PASS	PASS	PASS	TDD	PASS	N/A
H	2600	8/9/2018	7409	2600	Head	1.914	38.662	PASS	PASS	PASS	TDD	PASS	N/A
H	3500	10/30/2018	3949	3500	Head	2.803	38.5	PASS	PASS	PASS	TDD	PASS	N/A
H	3700	10/30/2018	3949	3700	Head	2.997	38.156	PASS	PASS	PASS	TDD	PASS	N/A
H	5250	7/5/2018	7409	5250	Head	4.492	34.994	PASS	PASS	PASS	OFDM	N/A	PASS
H	5600	7/5/2018	7409	5600	Head	4.839	34.496	PASS	PASS	PASS	OFDM	N/A	PASS
H	5750	7/5/2018	7409	5750	Head	4.995	34.288	PASS	PASS	PASS	OFDM	N/A	PASS
I	750	7/19/2018	7406	750	Body	0.969	53.451	PASS	PASS	PASS	N/A	N/A	N/A
G	835	8/29/2018	7410	835	Body	0.956	54.177	PASS	PASS	PASS	GMSK	PASS	N/A
I	835	8/8/2018	7406	835	Body	0.98	53.497	PASS	PASS	PASS	GMSK	PASS	N/A
J	1750	9/5/2018	3347	1750	Body	1.454	53.515	PASS	PASS	PASS	N/A	N/A	N/A
H	1750	8/17/2018	7409	1750	Body	1.505	52.002	PASS	PASS	PASS	N/A	N/A	N/A
H	1900	9/25/2018	7409	1900	Body	1.541	50.669	PASS	PASS	PASS	GMSK	PASS	N/A
E	1900	8/9/2018	3213	1900	Body	1.57	51.136	PASS	PASS	PASS	GMSK	PASS	N/A
J	1900	8/30/2018	3347	1900	Body	1.566	52.424	PASS	PASS	PASS	GMSK	PASS	N/A
K	2300	4/3/2018	3319	2300	Body	1.871	51.575	PASS	PASS	PASS	N/A	N/A	N/A
K	2450	4/3/2018	3319	2450	Body	2.043	51.13	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
H	2450	11/2/2018	7409	2450	Body	1.989	51.193	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
H	2600	11/1/2018	7409	2600	Body	2.196	50.538	PASS	PASS	PASS	TDD	PASS	N/A
K	2600	4/3/2018	3319	2600	Body	2.225	50.665	PASS	PASS	PASS	TDD	PASS	N/A
L	3500	11/1/2018	3914	3500	Body	3.336	51.607	PASS	PASS	PASS	TDD	PASS	N/A
L	3700	11/2/2018	3914	3700	Body	3.55	51.31	PASS	PASS	PASS	TDD	PASS	N/A
D	5250	6/11/2018	7357	5250	Body	5.529	48.096	PASS	PASS	PASS	OFDM	N/A	PASS
D	5600	6/11/2018	7357	5600	Body	6.007	47.521	PASS	PASS	PASS	OFDM	N/A	PASS
D	5750	6/11/2018	7357	5750	Body	6.214	47.275	PASS	PASS	PASS	OFDM	N/A	PASS

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to FCC KDB Publication 865664 D01v01r04.

FCC ID: A3LSMG970U		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 11/11/18 – 01/17/19	DUT Type: Portable Handset			APPENDIX E: Page 1 of 1

APPENDIX G POWER REDUCTION VERIFICATION

Per the May 2017 TCBC Workshop Notes, demonstration of proper functioning of the power reduction mechanisms is required to support the corresponding SAR configurations. The verification process was divided into two parts: (1) evaluation of output power levels for individual or multiple triggering mechanisms and (2) evaluation of the triggering distances for proximity-based sensors.

G.1 Power Verification Procedure

The power verification was performed according to the following procedure:

1. A base station simulator was used to establish a conducted RF connection and the output power was monitored. The power measurements were confirmed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.
2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.
3. Steps 1 and 2 were repeated for all individual power reduction mechanisms and combinations thereof. For the combination cases, one mechanism was switched to a 'triggered' state at a time; powers were confirmed to be within tolerances after each additional mechanism was activated.

FCC ID: A3LSMG970U	 SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Test Dates: 11/11/18 – 01/17/19	DUT Type: Portable Handset	APPENDIX G: Page 1 of 2

G.2 Main Antenna Verification Summary

Table G-1
Power Measurement Verification for Main Antenna

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
		Un-triggered (Max)	Mechanism #1 (Reduced)
1st			
Hotspot On	PCS CDMA	23.51	19.47
Hotspot On	GPRS 1900	26.05	23.94
Hotspot On	UMTS 1750	24.17	19.13
Hotspot On	UMTS 1900	23.51	18.49
Hotspot On	LTE FDD Band 66	24.61	20.69
Hotspot On	LTE FDD Band 4	24.4	20.39
Hotspot On	LTE FDD Band 25	23.87	19.41
Hotspot On	LTE FDD Band 2	23.98	19.6
Hotspot On	LTE FDD Band 30	22.28	17.79
Hotspot On	LTE FDD Band 7	23.29	17.95
Hotspot On	LTE FDD Band 7 Ant A	23.41	18.1
Hotspot On	LTE TDD Band 48	23.29	20.46
Hotspot On	LTE TDD Band 41 (PC3)	23.15	20.52
Hotspot On	LTE TDD Band 41 (PC2)	26.04	20.51
Hotspot On	LTE TDD Band 38	23.57	20.49

G.3 WIFI Verification Summary

Table G-2
Power Measurement Verification WIFI

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
		Un-triggered (Max)	Mechanism #1 (Reduced)
1st			
Held-to-Ear	802.11b	19.15	15.44
Held-to-Ear	802.11g	16.53	15.21
Held-to-Ear	802.11n (2.4GHz)	16.78	15.46
Held-to-Ear	802.11a	16.59	12.89
Held-to-Ear	802.11n (5GHz, 20MHz BW)	16.74	13.06
Held-to-Ear	802.11ac (20MHz BW)	16.84	12.91
Held-to-Ear	802.11n (5GHz, 40MHz BW)	16.1	12.63
Held-to-Ear	802.11ac (40MHz BW)	16.19	12.46
Held-to-Ear	802.11ac (80MHz BW)	14.62	12.57

*Note: 802.11ax and MIMO WIFI modes were not evaluated due to equipment limitations.

FCC ID: A3LSMG970U	 PCTEST Engineering Laboratory, Inc.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 – 01/17/19	DUT Type: Portable Handset	APPENDIX G: Page 2 of 2		

APPENDIX H: DOWNLINK LTE CA RF CONDUCTED POWERS

1.1 LTE Downlink Only Carrier Aggregation Test Reduction Methodology

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. Per April 2018 TCBC Workshop Notes, the following test reduction methodology was applied to determine the combinations required for conducted power measurements.

LTE DLCA Test Reduction Methodology:

- The supported combinations were arranged by the number of component carriers in columns.
- Any limitations on the PCC or SCC for each combination were identified alongside the combination (e.g. CA_2A-2A-4A-12A, but B12 can only be configured as a SCC).
- Power measurements were performed for "supersets" (LTE CA combinations with multiple components carriers) and any "subsets" (LTE CA combinations with fewer component carriers) that were not completely covered by the supersets.
- Only subsets that have the exact same components as a superset were excluded for measurement.
- When there were certain restrictions on component carriers that existed in the superset that were not applied for the subset, the subset configuration was additionally evaluated.
- Both inter-band and intra-band downlink carrier aggregation scenarios were considered.
- Downlink CA combinations for SISO and 4x4 Downlink MIMO operations were measured independently, per May 2017 TCBC Workshop notes.

Table 1 – Example of Exclusion Table for SISO Configurations

Index	ZCC	Supported Channel Bandwidth (MHz)				Restriction	Completely Covered by Measurement Superset	Index	ZCC	Supported Channel Bandwidth (MHz)				Restriction	Completely Covered by Measurement Superset	Index	ZCC	Supported Channel Bandwidth (MHz)				Restriction	Completely Covered by Measurement Superset
		CC1	CC2	CC3	CC4					CC1	CC2	CC3	CC4					CC1	CC2	CC3	CC4		
RCC#1	CA_2A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#1	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No	RCC#1	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20		No		
RCC#2	CA_2A	5, 10, 15, 20				No	RCC#2	CA_2A-2A-4A	5, 10, 15, 20				No	RCC#2	CA_2A-2A-4A-12A	5, 10, 15, 20					No		
RCC#3	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#3	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#3	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#4	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#4	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#4	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#5	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#5	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#5	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#6	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#6	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#6	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#7	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#7	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#7	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#8	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#8	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#8	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#9	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#9	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#9	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#10	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#10	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#10	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#11	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#11	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#11	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#12	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#12	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#12	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#13	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#13	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#13	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#14	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#14	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#14	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#15	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#15	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#15	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#16	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#16	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#16	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#17	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#17	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#17	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#18	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#18	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#18	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#19	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#19	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#19	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#20	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#20	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#20	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#21	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#21	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#21	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#22	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#22	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#22	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#23	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#23	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#23	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#24	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#24	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#24	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#25	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#25	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#25	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#26	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#26	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#26	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#27	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#27	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#27	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#28	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#28	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#28	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#29	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#29	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#29	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#30	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#30	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#30	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#31	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#31	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#31	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#32	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#32	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#32	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#33	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#33	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#33	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#34	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#34	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#34	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#35	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#35	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#35	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#36	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#36	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#36	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#37	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#37	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#37	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#38	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#38	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#38	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#39	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#39	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#39	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#40	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#40	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#40	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#41	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#41	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#41	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#42	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#42	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#42	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#43	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#43	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#43	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#44	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#44	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#44	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#45	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#45	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#45	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#46	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#46	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#46	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#47	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#47	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#47	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#48	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#48	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#48	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#49	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#49	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No	RCC#49	CA_2A-2A-4A-12A	5, 10, 15, 20	5, 10, 15, 20				No		
RCC#50	CA_2A-2A-4A	5, 10, 15, 20	5, 10, 15, 20			No																	

1.2 LTE Downlink Only Carrier Aggregation Test Selection and Setup

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by the product implementation. For those configurations required by April 2018 TCBC Workshop Notes, 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 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 among the channel bandwidth, modulation, and RB combinations in each frequency band.

This device supports LAA with downlink carrier aggregation only. It uses carrier aggregation in the downlink to combine LTE in the unlicensed spectrum (i.e. LTE Band 46) with LTE in the licensed band (served as PCC). All uplink communications and acknowledgements on the PCC remain identical to specifications when downlink carrier aggregation is inactive.

Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the maximum 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. All bands required for SAR testing per FCC KDB procedures were considered. Based on the measured maximum powers below, no additional SAR tests were required for DLCA SAR configurations.

General PCC and SCC configuration selection procedure

- PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
- To maximize aggregated bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
- All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.

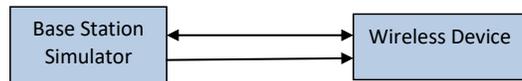


Figure 1
DL CA Power Measurement Setup

FCC ID: A3LSMG970U	 SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset		APPENDIX H: Page 2 of 17

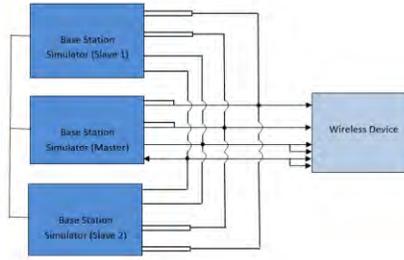


Figure 2
DL CA with DL 4x4 MIMO Power Measurement Setup

1.3 Downlink Carrier Aggregation RF Conducted Powers

1.3.1 LTE Band 71 as PCC

Table 1
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [DL] Freq. [MHz]	Mod.	PCC				SCC 1				SCC 2				SCC 3				LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]				
						PCC UL RB	PCC [DL] Channel	PCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]							
CA 4A-4A-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	-	24.66	24.62	
CA 2A-2A-4A-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	-	-	-	-	24.58	24.62
CA 2A-2A-66A-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B66	20	66786	2145	-	-	-	-	24.70	24.62
CA 2A-66A-66A-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66786	2145	-	-	-	-	24.75	24.62
CA 2A-66C-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66786	2145	-	-	-	-	24.73	24.62

1.3.2 LTE Band 12 as PCC

Table 2
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [DL] Freq. [MHz]	Mod.	PCC				SCC 1				SCC 2				SCC 3				SCC 4		LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]			
						PCC UL RB	PCC [DL] Channel	PCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel			SCC [DL] Freq. [MHz]		
CA 2A-12A (1)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	-	-	-	-	-	-	-	-	-	-	-	-	24.65	24.59	
CA 4A-12A (1)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	-	-	-	24.69	24.59	
CA 4A-12A (2)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	-	-	-	24.68	24.59	
CA 12A-25A (1)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66786	2145	-	-	-	-	-	24.67	24.59
CA 12A-66A (2)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B66	20	66786	2145	-	-	-	-	-	-	-	-	-	-	-	-	24.67	24.59	
CA 4A-4A-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B4	20	2175	2132.5	LTE B4	10	2350	2150	-	-	-	-	-	-	-	-	-	24.62	24.59
CA 2A-2A-4A-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2132.5	-	-	-	-	-	24.67	24.59
CA 2A-2A-12A-66A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66786	2145	-	-	-	-	-	24.66	24.59
CA 2A-12A-66A-66A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66786	2145	-	-	-	-	-	24.56	24.59
CA 2A-12A-66C	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66786	2145	-	-	-	-	-	24.68	24.59
CA 4A-12A-66A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B4	20	2175	2132.5	LTE B4	20	3100	2655	-	-	-	-	-	-	-	-	-	24.84	24.55
CA 2A-2A-7A-12A-66A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	LTE B2	20	3100	2655	LTE B66	20	66786	2145	-	-	-	-	-	24.62	24.59
CA 2A-7A-12B-66A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	LTE B2	20	900	1960	LTE B2	20	3100	2655	LTE B66	20	66786	2145	-	-	-	-	-	24.71	24.59

Note: ^ - Indicates that Band 7 operations are using antenna A

1.3.3 LTE Band 13 as PCC

Table 3
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [DL] Freq. [MHz]	Mod.	PCC				SCC 1				SCC 2				SCC 3				SCC 4				LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]		
						PCC UL RB	PCC [DL] Channel	PCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]					
CA 2A-13A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B46	20	50665	3527.5	-	-	-	-	-	-	-	-	-	24.57	24.40	
CA 13A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B66	20	66786	2145	-	-	-	-	-	-	-	-	-	24.58	24.40	
CA 13A-46C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	-	-	-	-	-	-	24.47	24.40
CA 2A-13A-66B	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B66	15	66786	2145	LTE B66	5	66879	2164.3	-	-	-	-	-	-	24.39	24.40
CA 2A-13A-66C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B66	20	66786	2145	LTE B66	20	66864	2164.8	-	-	-	-	-	-	24.42	24.40
CA 13A-46C-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	-	-	-	-	-	-	-	-	-	24.54	24.40	
CA 13A-46A-66B	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B66	5	66786	2145	LTE B66	15	66879	2164.3	-	-	-	-	-	-	24.42	24.40
CA 13A-46A-66C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B66	20	66786	2145	LTE B66	20	66864	2164.8	-	-	-	-	-	-	24.41	24.40
CA 2A-2A-4A-4A-13A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B4	20	2375	2132.5	LTE B4	20	2350	2150	-	-	-	-	-	-	24.35	24.40
CA 2A-2A-13A-66A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B66	20	66786	2145	-	-	-	-	-	-	24.43	24.40
CA 2A-13A-66B	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.46	24.40
CA 2A-13A-66C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.44	24.40
CA 2A-13A-46A-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	-	-	-	-	-	-	24.42	24.40
CA 2A-13A-46B-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B2	20	900	1960	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	-	-	-	-	-	-	24.43	24.40
CA 13A-46C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.56	24.40
CA 13A-46A-66B	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.41	24.40
CA 13A-46A-66C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.45	24.40
CA 13A-46B-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.43	24.40
CA 13A-46B-66B	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.43	24.40
CA 13A-46B-66C	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46	20	50665	3527.5	LTE B46	20	50667	3517.7	LTE B46	20	50668	3517.7	-	-	-	-	-	-	24.43	24.40
CA 13A-46C-66A	LTE B13	10	23230	782	QPSK	1	49	5230	751	LTE B46																			

1.3.4 LTE Band 14 as PCC

Table 4
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power				
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
CA 2A-2A-14A-30A-66A	LTE B14	5	2330	793	QPSK	1	0	5330	763	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B20	10	8020	2355	LTE B26	20	2000	2335	-	-	-	-	24.84	24.66
CA 2A-2A-14A-66A-66A	LTE B14	5	2330	793	QPSK	1	0	5330	763	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B26	20	66786	2145	LTE B26	20	67236	2190	-	-	-	-	24.83	24.66
CA 2A-14A-30A-66A-66A	LTE B14	5	2330	793	QPSK	1	0	5330	763	LTE B2	20	900	1960	LTE B20	10	8020	2355	LTE B26	20	66786	2145	LTE B26	20	67236	2190	-	-	-	-	24.88	24.66

1.3.5 LTE Band 5 as PCC

Table 5
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power					
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)	
CA 5A-5A (1)	LTE B5	3	2025	836.5	QPSK	1	14	2525	881.5	LTE B5	5	2025	881.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.16	25.08	
CA 5B (1)	LTE B5	3	2025	836.5	QPSK	1	14	2525	881.5	LTE B5	5	2486	877.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.15	25.08	
CA 5A-5A	LTE B5	3	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2025	881.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.23	25.08	
CA 5A-5A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	20	8365	1962.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.90	24.89	
CA 5A-5A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	20	8365	1962.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.81	24.89	
CA 5A-41C (1)	LTE B5	3	2025	836.5	QPSK	1	14	2525	881.5	LTE B46	20	5065	5537.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.06	25.08	
CA 2A-5A-46A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	5065	5537.5	-	-	-	-	-	-	-	-	-	-	-	-	-	25.09	24.89
CA 5B-46A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2453	874.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.02	24.83	
CA 5A-46A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B46	20	5065	5537.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.02	24.89	
CA 5A-46C (1)	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B46	20	5065	5537.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.05	24.89	
CA 2A-4A-5A-30A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B4	20	2175	2152.5	LTE B30	10	8020	2355	-	-	-	-	-	-	-	-	-	24.87	24.89
CA 2A-5A-46C	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	5065	5537.5	LTE B46	20	50467	5517.7	-	-	-	-	-	-	-	-	-	24.89	24.89
CA 2A-5A-66A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2425	871.5	LTE B5	20	60786	2145	LTE B26	20	67236	2190	-	-	-	-	-	-	-	-	-	24.85	24.89
CA 5A-66B	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2425	871.5	LTE B5	15	66786	2145	LTE B26	5	66679	2154.3	-	-	-	-	-	-	-	-	-	24.86	24.89
CA 5A-4A-66C	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2425	871.5	LTE B26	20	60786	2145	LTE B26	20	60944	2164.8	-	-	-	-	-	-	-	-	-	24.87	24.89
CA 5A-46C	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B46	20	5065	5537.5	LTE B46	20	5065	5537.5	LTE B46	20	50467	5517.7	-	-	-	-	-	-	-	-	-	24.96	24.89
CA 5A-41C (1)	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B46	20	5065	5537.5	LTE B46	20	50467	5517.7	LTE B46	20	60786	2145	-	-	-	-	-	-	-	-	-	24.83	24.89
CA 2A-5A-4A-4A-5A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B4	20	2175	2152.5	LTE B4	20	2175	2152.5	LTE B4	20	2175	2152.5	-	24.92	24.89
CA 2A-2A-4A-4B	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2453	874.3	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B2	20	700	1940	LTE B30	10	8020	2355	-	24.88	24.89
CA 2A-2A-5A-30A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B30	10	8020	2355	LTE B26	20	66786	2145	-	-	-	-	24.90	24.89	
CA 2A-2A-66A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B26	20	66786	2145	LTE B26	20	67236	2190	-	-	-	-	24.92	24.89	
CA 2A-2A-5A-66B	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B26	15	66679	2154.3	-	-	-	-	-	-	-	-	24.88	24.89	
CA 5A-4A-66C	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B2	20	700	1940	LTE B26	20	66786	2145	LTE B26	20	66884	2164.8	-	-	-	-	24.91	24.89	
CA 2A-5A-4A-66B	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2453	874.3	LTE B2	20	900	1960	LTE B4	20	2175	2152.5	LTE B4	20	2175	2152.5	-	-	-	-	24.93	24.89	
CA 2A-5A-46D	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	5065	5537.5	LTE B46	20	50467	5517.7	-	-	-	-	-	-	-	-	24.79	24.89	
CA 2A-5B-66A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2453	874.3	LTE B2	20	900	1960	LTE B30	10	8020	2355	LTE B26	20	66786	2145	-	-	-	-	24.94	24.89	
CA 2A-2A-66A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2453	874.3	LTE B2	20	900	1960	LTE B26	15	66786	2145	LTE B26	20	67236	2190	-	-	-	-	24.95	24.89	
CA 2A-5B-66B	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2453	874.3	LTE B2	20	900	1960	LTE B26	15	66786	2145	LTE B26	20	66884	2164.8	-	-	-	-	24.91	24.89	
CA 2A-5A-46C	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	5065	5537.5	LTE B46	20	50467	5517.7	-	-	-	-	-	-	-	-	24.93	24.89	
CA 2A-5A-30A-66A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B20	10	8020	2355	LTE B26	20	66786	2145	LTE B26	20	67236	2190	-	-	-	-	24.99	24.89	
CA 2A-5A-46A-46C	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	50990	5625	LTE B46	20	55340	5560	LTE B46	20	55538	5579.8	-	-	-	-	24.87	24.89	
CA 2A-5A-46B	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	50990	5625	LTE B46	20	55340	5560	LTE B46	20	55538	5579.8	-	-	-	-	24.93	24.89	
CA 2A-5A-46A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	50990	5625	LTE B46	20	55340	5560	LTE B26	20	66786	2145	-	-	-	-	24.90	24.89	
CA 2A-5A-46C-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B2	20	900	1960	LTE B46	20	50990	5625	LTE B46	20	55340	5560	LTE B46	20	55538	5579.8	-	-	-	-	25.00	24.89	
CA 5B-30A-66A-66A	LTE B5	10	2025	836.5	QPSK	1	0	2525	881.5	LTE B5	5	2453	874.3	LTE B20	10	8020	2355	LTE B26	20	66786	2145	LTE B26	20	67236	2190	-	-	-	-	24.94		

1.3.3 LTE Band 41 PC2 as PCC

Table 13
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power	
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (DL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]	
CA 41A-41A (1)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	41490	2580	-	-	-	-	-	-	-	-	-	-	-	-	27.82	27.60	
CA 41A-41C	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	41490	2580	LTE B41 PC2	20	41490	2580	-	-	-	-	-	-	-	-	-	27.75	27.60
CA 41C-41A	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	39921	2523.1	LTE B41 PC2	20	41490	2580	-	-	-	-	-	-	-	-	-	27.66	27.60
CA 41A-41D	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	41094	2640.4	LTE B41 PC2	20	41292	2660.2	LTE B41 PC2	20	41490	2580	-	-	-	-	-	27.73	27.60
CA 41D-41A	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	39921	2523.1	LTE B41 PC2	20	40119	2542.9	LTE B41 PC2	20	41490	2580	-	-	-	-	-	27.81	27.60
CA 41C-41C	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	39921	2523.1	LTE B41 PC2	20	41292	2660.2	LTE B41 PC2	20	41490	2580	-	-	-	-	-	27.77	27.60
CA 41E	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	39921	2523.1	LTE B41 PC2	20	40319	2542.9	LTE B41 PC2	20	40319	2542.9	-	-	-	-	-	27.66	27.60
CA 41C-41D	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	39921	2523.1	LTE B41 PC2	20	40319	2542.9	LTE B41 PC2	20	41292	2660.2	LTE B41 PC2	20	41490	2580	27.87	27.60	
CA 41D-41C	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	39921	2523.1	LTE B41 PC2	20	40119	2542.9	LTE B41 PC2	20	41292	2660.2	LTE B41 PC2	20	41490	2580	27.72	27.60	
CA 41F	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	LTE B41 PC2	20	39921	2523.1	LTE B41 PC2	20	40119	2542.9	LTE B41 PC2	20	40319	2542.9	LTE B41 PC2	20	40515	2582.5	27.73	27.60	

1.3.4 LTE Band 48 as PCC

Table 14
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power	
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (DL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]	
CA 48A-48A	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	-	-	-	-	-	-	-	-	-	-	-	-	23.49	23.70	
CA 48A-48C	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	-	-	-	-	-	-	-	-	-	23.49	23.70
CA 48C-48A	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	-	-	-	-	-	-	-	-	-	23.47	23.70
CA 48A-48D	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	-	-	-	-	-	23.51	23.70
CA 48C-48A	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	-	-	-	-	-	23.42	23.70
CA 48C-48C	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	-	-	-	-	-	23.42	23.70
CA 48A-48E	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	23.41	23.70	
CA 48E-48A	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	-	-	-	-	-	23.58	23.70
CA 48C-48D	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	23.76	23.70	
CA 48D-48C	LTE B48	5	56715	3697.5	QPSK	1	12	56715	3697.5	LTE B48	20	55340	3560	LTE B48	20	55340	3560	LTE B48	20	55340	3560	-	-	-	-	-	23.50	23.70

1.4 DL CA with DL 4x4 MIMO RF Conduction Powers

This device supports downlink 4x4 MIMO operations for some LTE bands. Uplink transmission is limited to a single output stream. When carrier aggregation was applicable, the general test selection and setup procedures described in Section 1.2 were applied.

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.

1.4.1 LTE 4x4 MIMO DL Standalone Powers

Table 15
Maximum Output Powers

LTE Band	Bandwidth [MHz]	Channel	Frequency [MHz]	Modulation	RB Size	RB Offset	4x4 DL MIMO Tx. Power [dBm]	Single Antenna Tx. Power [dBm]
66	3	132322	1745	QPSK	1	14	24.7	24.72
25	20	26140	1860	QPSK	1	0	23.86	23.90
7	15	21100	2535	QPSK	1	0	23.44	23.53
30	5	27710	2310	QPSK	1	12	22.79	22.78
41	20	41490	2680	QPSK	1	0	23.50	23.59
41 PC2	15	39750	2506	QPSK	1	0	27.58	27.60

FCC ID: A3LSMG970U	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset	APPENDIX H: Page 7 of 17		

1.4.2 LTE Band 71 as PCC

Table 16
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [UL] Freq. [MHz]	PCC				SCC 1				SCC 2				SCC 3				Power												
					Mod.	PCC UL RB	PCC UL RB Offset	PCC [DL] Ch.	PCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)						
CA [4A]-[4A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B4	20	2175	2132.5	4x4	LTE B4	10	2350	2150	2x2	-	-	-	-	-	-	-	-	-	-	24.57	24.62	
CA [4A]-[4A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B4	20	2175	2132.5	4x4	LTE B4	10	2350	2150	4x4	-	-	-	-	-	-	-	-	-	-	-	24.52	24.62
CA [2A]-[2A]-[4A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	24.59	24.62
CA [2A]-[2A]-[4A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	24.56	24.62
CA [2A]-[2A]-[4A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	24.62	24.62
CA [2A]-[2A]-[4A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	4x4	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	24.57	24.62
CA [2A]-[2A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B2	20	700	1940	2x2	LTE B6	20	66786	2145	4x4	-	-	-	-	-	-	24.62	24.62
CA [2A]-[2A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B6	20	66786	2145	4x4	-	-	-	-	-	-	24.60	24.62
CA [2A]-[2A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	66786	2145	4x4	-	-	-	-	-	-	24.65	24.62
CA [2A]-[2A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	66786	2145	4x4	-	-	-	-	-	-	24.62	24.62
CA [2A]-[66A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B6	20	66786	2145	2x2	LTE B6	20	67236	2190	2x2	-	-	-	-	-	-	24.59	24.62
CA [2A]-[66A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6	20	66786	2145	4x4	LTE B6	20	67236	2190	2x2	-	-	-	-	-	-	24.57	24.62
CA [2A]-[66A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B6	20	66786	2145	4x4	LTE B6	20	67236	2190	4x4	-	-	-	-	-	-	24.63	24.62
CA [2A]-[66A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6	20	66786	2145	4x4	LTE B6	20	67236	2190	2x2	-	-	-	-	-	-	24.58	24.62
CA [2A]-[66A]-[66A]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6	20	66786	2145	4x4	LTE B6	20	67236	2190	4x4	-	-	-	-	-	-	24.58	24.62
CA [2A]-[66C]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	2x2	LTE B6	20	66786	2145	4x4	LTE B6	20	66984	2164.8	4x4	-	-	-	-	-	-	24.56	24.62
CA [2A]-[66C]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6	20	66786	2145	4x4	LTE B6	20	66984	2164.8	2x2	-	-	-	-	-	-	24.55	24.62
CA [2A]-[66C]-71A	LTE B71	20	133297	680.5	QPSK	1	0	68761	634.5	2x2	LTE B2	20	900	1960	4x4	LTE B6	20	66786	2145	4x4	LTE B6	20	66984	2164.8	4x4	-	-	-	-	-	-	24.55	24.62

1.4.3 LTE Band 12 as PCC

Table 17
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch.	PCC [UL] Freq. [MHz]	PCC				SCC 1				SCC 2				SCC 3				Power													
					Mod.	PCC UL RB	PCC UL RB Offset	PCC [DL] Ch.	PCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)							
CA [1A]-[1A]-12A (1)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.42	24.59	
CA [1A]-[1A]-12A (1)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.39	24.59	
CA [1A]-[1A]-12A (2)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.39	24.59	
CA [1A]-[1A]-12A (1)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B6	20	66786	2145	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.32	24.59	
CA [1A]-[66A]-12A (2)	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B6	20	66786	2145	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.46	24.59	
CA [2A]-[2A]-[12A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	2x2	LTE B7	20	3100	2655	4x4	-	-	-	-	-	-	-	-	-	-	-	-	24.58	24.59
CA [2A]-[2A]-[12A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	4x4	LTE B7	20	3100	2655	2x2	-	-	-	-	-	-	-	-	-	-	-	-	24.62	24.59
CA [2A]-[2A]-[12A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	4x4	LTE B7	20	3100	2655	4x4	-	-	-	-	-	-	-	-	-	-	-	-	24.63	24.59
CA [4A]-[4A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B4	20	2175	2132.5	4x4	LTE B4	10	2350	2150	2x2	-	-	-	-	-	-	-	-	-	-	-	-	24.62	24.59
CA [4A]-[4A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B4	20	2175	2132.5	4x4	LTE B4	10	2350	2150	4x4	-	-	-	-	-	-	-	-	-	-	-	-	24.61	24.59
CA [7A]-[12B]	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B12	10	5107	738.7	2x2	LTE B7	20	3100	2655	4x4	-	-	-	-	-	-	-	-	-	-	-	-	24.62	24.59
CA [12B]-[66A]	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B12	10	5107	738.7	2x2	LTE B6	20	66786	2145	4x4	-	-	-	-	-	-	-	-	-	-	-	-	24.57	24.59
CA [2A]-[2A]-[4A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	2x2	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	24.60	24.59	
CA [2A]-[2A]-[4A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	2x2	-	-	-	-	-	-	24.60	24.59	
CA [2A]-[2A]-[4A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	4x4	-	-	-	-	-	-	24.63	24.59	
CA [2A]-[2A]-[4A]-12A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B4	20	2175	2132.5	2x2	-	-	-	-	-	-	24.66	24.59	
CA [2A]-[2A]-[12A]-30A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	2x2	LTE B2	20	700	1940	2x2	LTE B30	10	9820	3355	2x2	-	-	-	-	-	-	24.63	24.59	
CA [2A]-[2A]-[12A]-30A	LTE B12	5	23035	701.5	QPSK	1	0	5035	731.5	2x2	LTE B2	20	900	1960	4x4	LTE B2	20	700	1940	2x2	LTE B30	10	9820	3355	4x4	-	-	-	-	-	-	24.65	24.59	
CA [2A]-[2A]-[12A]-30A	LTE B12	5	23035																															

1.4.7 LTE Band 26 as PCC

Table 21
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC (UL) Freq. [MHz]	Mod.	PCC					DL Ant. Config.	SCC 1				SCC 2				Power			
					PCC UL# RB	PCC UL RB Offset	PCC (DL) Ch.	PCC (DL) Freq. [MHz]	SCC Band		SCC BW [MHz]	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)	
CA [25A]-26A	LTE B26	10	26865	831.5	QPSK	1	0	8865	876.5	2x2	LTE B25	20	8365	1962.5	4x4	-	-	-	-	-	25.00	25.05
CA [26A]-41A	LTE B26	10	26865	831.5	QPSK	1	0	8865	876.5	2x2	LTE B41	20	40620	2593	4x4	-	-	-	-	-	25.14	25.05
CA [25A]-25A-26A	LTE B26	3	26865	831.5	QPSK	1	7	8865	876.5	2x2	LTE B25	20	8365	1962.5	4x4	LTE B25	20	8590	1985	2x2	24.95	25.00
CA [25A]-[25A]-26A	LTE B26	3	26865	831.5	QPSK	1	7	8865	876.5	2x2	LTE B25	20	8365	1962.5	4x4	LTE B25	20	8590	1985	4x4	24.93	25.00
CA [26A]-41C	LTE B26	10	26865	831.5	QPSK	1	0	8865	876.5	2x2	LTE B41	20	40620	2593	4x4	LTE B41	20	40422	2573.2	4x4	25.08	25.05

1.4.8 LTE Band 66 as PCC

Table 22
Maximum Output Powers

Combination	PCC										SCC 1										SCC 2										Power	
	PCC Band	PCC BW [MHz]	PCC (UL) Freq. [MHz]	Mod.	PCC UL# RB	PCC UL RB Offset	PCC (DL) Ch.	PCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC (DL) Ch.	SCC (DL) Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)						
CA [25A]-26A	LTE B26	10	26865	831.5	QPSK	1	0	8865	876.5	2x2	LTE B25	20	8365	1962.5	4x4	-	-	-	-	-	-	-	-	-	-	25.00	25.05					
CA [26A]-41A	LTE B26	10	26865	831.5	QPSK	1	0	8865	876.5	2x2	LTE B41	20	40620	2593	4x4	-	-	-	-	-	-	-	-	-	-	-	25.14	25.05				
CA [25A]-25A-26A	LTE B26	3	26865	831.5	QPSK	1	7	8865	876.5	2x2	LTE B25	20	8365	1962.5	4x4	LTE B25	20	8590	1985	2x2	24.95	25.00										
CA [25A]-[25A]-26A	LTE B26	3	26865	831.5	QPSK	1	7	8865	876.5	2x2	LTE B25	20	8365	1962.5	4x4	LTE B25	20	8590	1985	4x4	24.93	25.00										
CA [26A]-41C	LTE B26	10	26865	831.5	QPSK	1	0	8865	876.5	2x2	LTE B41	20	40620	2593	4x4	LTE B41	20	40422	2573.2	4x4	25.08	25.05										

FCC ID: A3LSMG970U



SAR EVALUATION REPORT



Reviewed by:
Quality Manager

Test Dates:
11/11/18 - 01/17/19

DUT Type:
Portable Handset

APPENDIX H:
Page 11 of 17

1.4.2 LTE Band 41 as PCC

Table 27
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power									
	PCC Band	PCC BW [MHz]	PCC [DL] Ch.	PCC [UL] Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC [DL] Ch.	PCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]				
CA 41(A)41(A)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	39750	2506	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.55	23.59		
CA 41(A)41(A)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	2x2	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.55	23.59		
CA 41(A)41(A)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.55	23.59		
CA 41(C)41(A)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	39750	2506	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	23.51	23.59	
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	23.51	23.59	
CA 41(A)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	2x2	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	23.52	23.59	
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	23.52	23.59	
CA 41(A)41(D)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	2x2	LTE B41	20	40146	2545.6	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	23.51	23.59	
CA 41(C)41(D)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	2x2	LTE B41	20	41292	2602.2	4x4	LTE B41	20	41094	2640.4	4x4	LTE B41	20	39750	2506	2x2	-	-	-	-	-	-	-	-	23.47	23.59	
CA 41(A)41(D)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	40146	2545.6	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	23.51	23.59	
CA 41(C)41(D)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	2x2	LTE B41	20	41094	2640.4	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	23.51	23.59	
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	2x2	-	-	-	-	-	-	-	-	23.55	23.59	
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	2x2	LTE B41	20	41292	2602.2	2x2	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	23.55	23.59	
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	-	-	-	-	23.55	23.59	
CA 41(E)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	41094	2640.4	4x4	LTE B41	20	40896	2620.6	4x4	-	-	-	-	-	-	-	-	23.51	23.59	
CA 41(C)41(D)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	2x2	LTE B41	20	41292	2602.2	2x2	LTE B41	20	40146	2545.6	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	2x2	-	-	-	-	23.56	23.59
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	41094	2640.4	4x4	LTE B41	20	39948	2525.8	2x2	LTE B41	20	39750	2506	2x2	-	-	-	-	23.60	23.59
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	2x2	LTE B41	20	41292	2602.2	2x2	LTE B41	20	40146	2545.6	4x4	LTE B41	20	39948	2525.8	2x2	LTE B41	20	39750	2506	2x2	-	-	-	-	23.61	23.59
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	41094	2640.4	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	23.52	23.59
CA 41(C)41(C)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	41094	2640.4	4x4	LTE B41	20	39948	2525.8	4x4	LTE B41	20	39750	2506	4x4	-	-	-	-	23.52	23.59
CA 41(F)	LTE B41	20	41490	2600	QPSK	1	0	41490	2600	4x4	LTE B41	20	41292	2602.2	4x4	LTE B41	20	41094	2640.4	4x4	LTE B41	20	40896	2620.6	4x4	LTE B41	20	40896	2600.8	4x4	-	-	-	-	23.52	23.59

1.4.3 LTE Band 41 PC2 as PCC

Table 28
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power								
	PCC Band	PCC BW [MHz]	PCC [DL] Ch.	PCC [UL] Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC [DL] Ch.	PCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC [DL] Freq. [MHz]	DL Ant. Config.	LTE Tx Power with DL CA Enabled [dBm]	LTE Single Carrier Tx Power [dBm]			
CA 41(A)41(A)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	44490	2600	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27.46	27.60		
CA 41(A)41(A)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	2x2	LTE B41 PC2	20	44490	2600	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27.40	27.60	
CA 41(A)41(A)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	44490	2600	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27.48	27.60	
CA 41(C)41(A)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	39921	2523.1	4x4	LTE B41 PC2	20	41490	2600	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	27.41	27.60
CA 41(C)41(C)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	39921	2523.1	4x4	LTE B41 PC2	20	41490	2600	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	27.43	27.60
CA 41(A)41(C)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	41292	2602.2	2x2	LTE B41 PC2	20	41490	2600	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	27.45	27.60
CA 41(C)41(C)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	39921	2523.1	4x4	LTE B41 PC2	20	41490	2600	4x4	-	-	-	-	-	-	-	-	-	-	-	-	-	27.46	27.60
CA 41(A)41(D)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	2x2	LTE B41 PC2	20	41292	2602.2	4x4	LTE B41 PC2	20	41094	2640.4	4x4	LTE B41 PC2	20	41490	2600	4x4	-	-	-	-	-	-	-	-	27.40	27.60
CA 41(C)41(D)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	39921	2523.1	4x4	LTE B41 PC2	20	40191	2542.9	4x4	LTE B41 PC2	20	41490	2600	2x2	-	-	-	-	-	-	-	-	27.44	27.60
CA 41(A)41(D)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	41292	2602.2	4x4	LTE B41 PC2	20	40191	2542.9	4x4	LTE B41 PC2	20	41490	2600	4x4	-	-	-	-	-	-	-	-	27.48	27.60
CA 41(C)41(D)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	39921	2523.1	2x2	LTE B41 PC2	20	40191	2542.9	2x2	LTE B41 PC2	20	41490	2600	4x4	-	-	-	-	-	-	-	-	27.48	27.60
CA 41(C)41(C)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	39921	2523.1	4x4	LTE B41 PC2	20	41292	2602.2	2x2	LTE B41 PC2	20	41490	2600	4x4	-	-	-	-	-	-	-	-	27.48	27.60
CA 41(C)41(C)	LTE B41 PC2	15	39750	2506	QPSK	1	0	39750	2506	4x4	LTE B41 PC2	20	39921	2523.1	4x4	LTE B41 PC2	20	41292	2602.2	4x4	LTE B41 PC2	20	41490	2600	4x4	-	-	-	-	-	-	-	-	27.46	27.60
CA 41(E)	LTE B41 PC2	15	39750	25																															

1.5 Downlink Carrier Aggregation with Uplink Carrier Aggregation enabled

This device supports uplink carrier aggregation (ULCA) with additional Carrier Aggregation configurations active in the downlink. Power measurements were performed with ULCA active and additional CA configurations active in the downlink for the configuration per Fall 2017 TCB Workshop Notes.

Per FCC Guidance, additional SAR measurements for these configurations were not required since their maximum output power was not more than 0.25 dB higher than the maximum output power for with only ULCA active.

1.5.1 DL Carrier Aggregation RF Conducted Powers

Table 29
Maximum Output Powers

Combination on DL	PCC								SCC1					SCC2				Power		
	PCC Band	PCC Bandwidth [MHz]	PCC (UL/DL) Channel	PCC (UL/DL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	CA_41C ULCA Tx. Power with add'l CA configuration active in DL (dBm)	CA_41C ULCA Tx. Power (dBm)
CA_41D	LTE B41	20	41490	2680.0	QPSK	1	0	LTE B41	20	41292	2660.2	QPSK	1	99	LTE B41	20	41094	2640.4	24.04	24.03
Combination on DL	PCC								SCC1					SCC2				Power		
CA_41D	LTE B41 PC2	20	41490	2680.0	QPSK	1	0	LTE B41 PC2	20	41292	2660.2	QPSK	1	99	LTE B41 PC2	20	41094	2640.4	27.19	27.25

1.5.2 DL Carrier Aggregation with DL 4x4 MIMO RF Conducted Powers

Note: 4x4 DL MIMO is only operating in the downlink. Uplink transmission is limited to a single output stream for each component carrier of ULCA.

Table 30
Maximum Output Powers

Combination	PCC								SCC								Power											
	PCC Band	PCC Bandwidth [MHz]	PCC UL Channel	PCC UL Frequency [MHz]	DL Ant. Config.	PCC DL Channel	PCC DL Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL/DL) Channel	SCC (UL/DL) Frequency [MHz]	DL Ant. Config.	SCC UL# RB	SCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC DL Channel	SCC DL Frequency [MHz]	Modulation	SCC UL# RB	SCC UL RB Offset	LTE Tx. Power with UL CA Enabled (dBm)	LTE Single Carrier Tx. Power (dBm)		
CA_66C	LTE B66	20	132572	1770.0	4x4	67036	2170.0	QPSK	1	0	LTE B66	20	132374	1750.2	4x4	66838	2150.2	QPSK	1	99	-	-	-	-	-	24.72	24.94	
CA_66B	LTE B66	10	132622	1775.0	4x4	67086	2175.0	QPSK	1	0	LTE B66	10	132523	1765.1	4x4	66987	2165.1	QPSK	1	49	-	-	-	-	-	24.60	24.92	
Combination on DL	PCC								SCC								Power											
CA_41C (1)	LTE B41	20	41490	2680.0	4x4	QPSK	1	0	LTE B41	20	41292	2660.2	4x4	QPSK	1	99	-	-	-	-	-	-	-	-	-	23.88	24.03	
CA_41D	LTE B41	20	41490	2680.0	4x4	QPSK	1	0	LTE B41	20	41292	2660.2	4x4	QPSK	1	99	LTE B41	20	41094	2640.4	4x4	-	-	-	-	-	23.80	24.03
Combination on DL	PCC								SCC1								SCC2				Power							
CA_41C (1)	LTE B41 PC2	20	41490	2680.0	QPSK	1	0	4x4	LTE B41 PC2	20	41292	2660.2	QPSK	1	99	4x4	-	-	-	-	-	-	-	-	-	27.12	27.25	
CA_41D	LTE B41 PC2	20	41490	2680.0	QPSK	1	0	4x4	LTE B41 PC2	20	41292	2660.2	QPSK	1	99	4x4	LTE B41 PC2	20	41094	2640.4	4x4	-	-	-	-	-	27.34	27.25

FCC ID: A3LSMG970U	 SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset		APPENDIX H: Page 17 of 17

APPENDIX I: IEEE 802.11AX RU SAR EXCLUSION

1.1 IEEE 802.11ax RU SAR Exclusion

To make the most efficient use of the additional available subcarriers (data tones), IEEE 802.11ax can utilize Orthogonal Frequency-Division Multiple Access (OFDMA) which divides the existing 802.11 channels into smaller subchannels called Resource Units (RUs). Possible RU sizes are: 26T, 52T, 106T, 242T, 484T and 996T.

Per FCC Guidance, 802.11ax was considered a higher order 802.11 mode when compared to a/b/g/n/ac to apply KDB Publication 248227 D01v02r02 for OFDM mode selection. Therefore, SAR tests were not required for 802.11ax based on the maximum allowed output powers of OFDM modes and the reported SAR values. Per FCC Guidance, maximum conducted powers were performed for each RU size to demonstrate that the output powers would not be higher than the other OFDM 802.11 modes.

1.2 IEEE 802.11ax RU Target Powers

1.2.1 Maximum 802.11ax RU WLAN Output Power

Tones		SISO (ANT1) /in dBm				SISO (ANT2) /in dBm				MIMO (ALL) /in dBm			
		2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz
Ch & RU index													
26T	Maximum	14	11	11	11	14	11	11	11	14	11	11	11
	Nominal	13	10	10	10	13	10	10	10	13	10	10	10
52T	Maximum	16	13	13	13	16	13	13	13	16	13	13	13
	Nominal	15	12	12	12	15	12	12	12	15	12	12	12
106T	Maximum	18	15	15	15	18	15	15	15	18	15	15	15
	Nominal	17	14	14	14	17	14	14	14	17	14	14	14
242T	Maximum	18	18	17	16	18	18	17	16	18	18	17	16
	Nominal	ch 1: 15, ch 11, 13.5	ch 36: 15, ch 64: 16	ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5, ch 106: 12.5	ch 1: 15, ch 10: 17, ch 11: 8.5	ch 36: 15, ch 64: 16	ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5, ch 106: 12.5	ch 1: 13, ch 11, 13.5	ch 36: 15, ch 64: 16	ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5, ch 106: 12.5
484T	Maximum	17	17	16	15	17	17	16	15	17	17	16	15
	Nominal	ch 1: 14, ch 11, 12.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5, ch 106: 11.5	ch 1: 14, ch 10: 16, ch 11: 7.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5, ch 106: 11.5	ch 1: 12, ch 11, 12.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5, ch 106: 11.5
996T	Maximum	17	17	16	15	17	17	16	15	17	17	16	15
	Nominal	ch 1: 14, ch 11, 12.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5, ch 106: 11.5	ch 1: 14, ch 10: 16, ch 11: 7.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5, ch 106: 11.5	ch 1: 12, ch 11, 12.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5, ch 106: 11.5

FCC ID: A3LSMG970U	 SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset		APPENDIX H: Page 1 of 7

1.2.2 Reduced 802.11ax RU WLAN Output Power

Tones		SISO (ANT1) /in dBm				SISO (ANT2) /in dBm				MIMO (ALL) /in dBm			
		2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz
Ch & RU index													
26T	Maximum	14	11	11	11	14	11	11	11	14	11	11	11
	Nominal	13	10	10	10	13	10	10	10	13	10	10	10
52T	Maximum	16	13	13	13	16	13	13	13	16	13	13	13
	Nominal	15	12	12	12	15	12	12	12	15	12	12	12
106T	Maximum	17	14	14	14	17	14	14	14	18	14	14	14
	Nominal	16	13	13	13	16	13	13	13	17	13	13	13
242T	Maximum	17	14	14	14	17	14	14	14	18	17	17	16
		ch 1: 15, ch 11, 13.5		ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5	ch 1: 15, ch 11: 8.5		ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5	ch 1: 13, ch 11, 13.5	ch 36: 15, ch 64: 16	ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5 ch 106: 12.5
	Nominal	16	13	13	13	16	13	13	13	17	16	16	15
		ch 1: 14, ch 11, 12.5	ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5	ch 1: 14, ch 11: 7.5	ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5	ch 1: 12, ch 11, 12.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5 ch 106: 11.5		
484T	Maximum			14	14			14	14			17	16
	Nominal			13	13			13	13			16	15
996T	Maximum			14	14			14	14			17	16
		ch 42: 12, ch 58, 12.5 ch 106: 12.5		ch 42: 11, ch 58, 11.5 ch 106: 11.5		ch 42: 12, ch 58, 12.5 ch 106: 12.5		ch 42: 11, ch 58, 11.5 ch 106: 11.5		ch 42: 12, ch 58, 12.5 ch 106: 12.5		ch 42: 12, ch 58, 12.5 ch 106: 12.5	
	Nominal			13	13			13	13			16	15
		ch 42: 11, ch 58, 11.5 ch 106: 11.5		ch 42: 11, ch 58, 11.5 ch 106: 11.5		ch 42: 11, ch 58, 11.5 ch 106: 11.5		ch 42: 11, ch 58, 11.5 ch 106: 11.5		ch 42: 11, ch 58, 11.5 ch 106: 11.5		ch 42: 11, ch 58, 11.5 ch 106: 11.5	

FCC ID: A3LSMG970U	 SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset		APPENDIX H: Page 2 of 7

1.2.3 Maximum 802.11ax RU WLAN Output Power During Conditions with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN

Tones		SISO (ANT1) /in dBm				SISO (ANT2) /in dBm				MIMO (ALL) /in dBm			
		2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz
Ch & RU index													
26T	Maximum	14	11	11	11	14	11	11	11	14	11	11	11
	Nominal	13	10	10	10	13	10	10	10	13	10	10	10
52T	Maximum	16	13	13	13	16	13	13	13	16	13	13	13
	Nominal	15	12	12	12	15	12	12	12	15	12	12	12
106T	Maximum	17	14	14	14	17	14	14	14	18	14	14	14
	Nominal	16	13	13	13	16	13	13	13	17	13	13	13
242T	Maximum	17	14	14	14	17	14	14	14	18	17	17	16
		ch 1: 15, ch 11, 13.5		ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5	ch 1: 15, ch 11: 8.5		ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5	ch 1: 13, ch 11, 13.5	ch 36: 15, ch 64: 16	ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5 ch 106: 12.5
	Nominal	16	13	13	13	16	13	13	13	17	16	16	15
		ch 1: 14, ch 11, 12.5		ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5	ch 1: 14, ch 11, 7.5		ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5	ch 1: 12, ch 11, 12.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5 ch 106: 11.5
484T	Maximum												
	Nominal												
996T	Maximum												
	Nominal												

FCC ID: A3LSMG970U	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset	APPENDIX H: Page 3 of 7		

1.2.4 Reduced 802.11ax RU WLAN Output Power During Conditions with Simultaneous 2.4 GHz WLAN and 5 GHz WLAN

Tones		SISO (ANT1) /in dBm				SISO (ANT2) /in dBm				MIMO (ALL) /in dBm			
		2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz	2.4G	5G/20Mhz	5G/40Mhz	5G/80Mhz
Ch & RU index													
26T	Maximum	14	11	11	11	14	11	11	11	14	11	11	11
	Nominal	13	10	10	10	13	10	10	10	13	10	10	10
52T	Maximum	14	13	13	13	14	13	13	13	16	13	13	13
	Nominal	13	12	12	12	13	12	12	12	15	12	12	12
106T	Maximum	14	14	14	14	14	14	14	14	17	14	14	14
	Nominal	13	13	13	13	13	13	13	13	16	13	13	13
242T	Maximum	14	14	14	14	14	14	14	14	17	17	17	16
		ch 11, 13.5		ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5	ch 11, 8.5		ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5	ch 1: 13, ch 11, 13.5	ch 36: 15, ch 64: 16	ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5 ch 106: 12.5
	Nominal	13	13	13	13	13	13	13	13	16	16	16	15
		ch 11, 12.5		ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5	ch 11, 7.5		ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5	ch 1: 12, ch 11, 12.5	ch 36: 14, ch 64: 15	ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5 ch 106: 11.5
484T	Maximum			14	14			14	14			17	16
				ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5			ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5			ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5 ch 106: 12.5
	Nominal			13	13			13	13			16	15
				ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5			ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5			ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5 ch 106: 11.5
996T	Maximum			14	14			14	14			17	16
				ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5			ch 38: 13	ch 42: 12, ch 58, 12.5 ch 106: 12.5			ch 38: 13, ch 62: 14, ch 102: 15	ch 42: 12, ch 58, 12.5 ch 106: 12.5
	Nominal			13	13			13	13			16	15
				ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5			ch 38: 12	ch 42: 11, ch 58, 11.5 ch 106: 11.5			ch 38: 12, ch 62: 13, ch 102: 14	ch 42: 11, ch 58, 11.5 ch 106: 11.5

FCC ID: A3LSMG970U	 SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset		APPENDIX H: Page 4 of 7

1.3 IEEE 802.11ax Measured Powers

Table 1
Maximum 2.4 GHz 802.11ax RU Output Power – Ant 1

RU Index	Tones	Ch. 1	Ch. 2	Ch. 6	Ch. 10	Ch. 11
		Average	Average	Average	Average	Average
0	26	13.9		13.92		13.72
4	26	13.68		13.86		13.48
8	26	13.84		13.61		13.74
37	52	15.42		15.32		15.73
38	52	15.68		15.56		15.97
40	52	15.83		15.60		15.23
53	106	17.54		17.94	17.94	17.47
54	106	17.92		17.98	17.69	17.42
61	242	12.62	17.71	17.78	17.97	13.05

Table 2
Maximum 2.4 GHz 802.11ax RU Output Power – Ant 2

RU Index	Tones	Ch. 1	Ch. 2	Ch. 6	Ch. 9	Ch. 10	Ch. 11
		Average	Average	Average	Average	Average	Average
0	26	13.86		13.61			13.71
4	26	13.79		13.70			13.97
8	26	13.61		13.76			13.59
37	52	15.44		15.66			15.42
39	52	15.88		15.90			15.84
40	52	15.49		15.70			15.67
53	106	17.51		17.55		17.55	17.20
54	106	17.55		17.90		17.91	17.34
61	242	14.73	17.97	17.15	17.64	16.89	8.35

FCC ID: A3LSMG970U	 SAR EVALUATION REPORT 	Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset	APPENDIX H: Page 5 of 7

Table 3
Maximum 5 GHz 802.11ax RU Output Power – Ant 1

5GHz - 20MHz													
RU Index	Tones	UNII 1			UNII 2A			UNII 2C			UNII 3		
		Ch. 36	Ch. 40	Ch. 48	Ch. 52	Ch. 56	Ch. 64	Ch. 100	Ch. 120	Ch. 144	Ch. 149	Ch. 157	U3 - Ch. 165
		Average											
0	26	10.93	10.58	10.51	10.53	10.58	10.84	10.87	10.69	10.72	10.44	10.81	10.66
4	26	10.84	10.89	10.99	10.98	10.88	10.70	10.63	10.86	10.86	10.57	10.70	10.45
8	26	10.77	10.74	10.81	10.72	10.76	10.98	10.49	10.59	10.62	10.56	10.43	10.15
37	52	12.72	12.85	12.90	12.74	12.83	12.52	12.53	12.85	12.88	12.40	12.34	12.81
39	52	12.97	12.54	12.68	12.56	12.61	12.68	12.77	12.98	12.51	12.47	12.71	12.46
40	52	12.97	12.39	12.56	12.33	12.46	12.60	12.65	12.84	12.37	12.42	12.46	12.34
53	106	14.68	14.73	14.50	14.78	14.85	14.69	14.72	14.90	14.95	14.43	14.52	14.28
54	106	14.85	14.89	14.57	14.90	14.96	14.63	14.82	14.98	14.95	14.33	14.51	14.29
61	242	14.68	17.46	17.52	17.64	17.65	15.51	17.68	17.85	17.86	17.60	17.67	17.47

5GHz - 40MHz										
RU Index	Tones	UNII 1		UNII 2A		UNII 2C		UNII 3		
		Ch. 38	Ch. 46	Ch. 54	Ch. 62	Ch. 102	Ch. 118	Ch. 142	Ch. 151	Ch. 159
		Average								
0	26	10.93	10.53	10.99	10.57	10.97	10.59	10.81	10.98	10.52
8	26	10.66	10.75	10.55	10.80	10.66	10.71	10.89	10.57	10.57
17	26	10.48	10.53	10.61	10.72	10.72	10.71	10.83	10.74	10.52
37	52	12.66	12.56	12.82	12.87	12.51	12.66	12.92	12.89	12.46
40	52	12.83	12.64	12.61	12.82	12.57	12.67	12.80	12.78	12.84
44	52	12.84	12.65	12.83	12.97	12.85	12.75	12.88	12.96	12.64
53	106	14.45	14.78	14.48	14.59	14.74	14.80	14.95	14.51	14.59
54	106	14.82	14.47	14.60	14.75	14.94	14.91	14.58	14.72	14.71
56	106	14.47	14.82	14.60	14.68	14.54	14.47	14.62	14.54	14.68
61	242	12.87	16.49	16.67	13.66	14.58	16.84	16.97	16.68	16.55
62	242	12.71	16.48	16.59	13.56	14.74	16.85	16.98	16.84	16.58
65	484	12.61	16.75	16.47	13.69	14.80	16.76	16.92	16.96	16.88

5GHz - 80MHz							
RU Index	Tones	UNII 1	UNII 2A	UNII 2C		UNII 3	
		Ch. 42	Ch. 58	Ch. 106	Ch. 122	Ch. 138	Ch. 155
		Average	Average	Average	Average	Average	Average
0	26	10.98	10.88	10.54	10.57	10.69	10.45
18	26	10.70	10.60	10.80	10.63	10.75	10.52
36	26	10.67	10.62	10.62	10.57	10.65	10.55
37	52	12.80	12.59	12.50	12.55	12.74	12.70
44	52	12.89	12.91	12.84	12.97	12.96	12.72
52	52	12.51	12.75	12.56	12.60	12.69	12.88
53	106	14.47	14.55	14.49	14.60	14.65	14.71
56	106	14.82	14.99	14.86	14.83	14.99	14.65
60	106	14.59	14.38	14.60	14.62	14.70	14.78
61	242	11.89	12.10	12.06	15.85	15.36	15.51
62	242	11.60	12.30	12.38	15.99	15.68	15.79
64	242	11.98	12.07	12.12	15.94	15.42	15.56
65	484	11.62	12.26	11.96	15.63	15.72	15.65
66	484	11.76	12.38	12.01	15.71	15.85	15.86
67	996	11.63	12.32	11.91	15.50	15.61	15.73

FCC ID: A3LSMG970U	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset	APPENDIX H: Page 6 of 7		

Table 4
Maximum 5 GHz 802.11ax RU Output Power – Ant 2

5GHz - 20MHz													
RU Index	Tones	UNII 1			UNII 2A			UNII 2C			UNII 3		
		Ch. 36	Ch. 40	Ch. 48	Ch. 52	Ch. 56	Ch. 64	Ch. 100	Ch. 120	Ch. 144	Ch. 149	Ch. 157	Ch. 165
		Average											
0	26	10.92	10.90	10.70	10.99	10.50	10.74	10.80	10.63	10.83	10.65	10.92	10.78
4	26	10.85	10.80	10.90	10.76	10.90	10.95	10.97	10.87	10.95	10.92	10.96	10.90
8	26	10.67	10.52	10.82	10.46	10.67	10.74	10.71	10.36	10.65	10.51	10.77	10.73
37	52	12.62	12.67	12.88	12.78	12.83	12.96	12.93	12.82	12.90	12.69	12.74	12.72
39	52	12.90	12.84	12.59	12.85	12.53	12.71	12.93	12.82	12.93	12.76	12.99	12.85
40	52	12.69	12.83	12.55	12.73	12.47	12.61	12.84	12.64	12.78	12.60	12.81	12.71
53	106	14.62	14.62	14.76	14.82	14.83	14.99	14.93	14.68	14.69	14.74	14.83	14.65
54	106	14.77	14.71	14.87	14.76	14.96	14.67	14.85	14.51	14.72	14.53	14.68	14.61
61	242	14.74	17.71	17.89	17.50	17.58	15.89	17.59	17.68	17.71	17.70	17.83	17.69

5GHz - 40MHz										
RU Index	Tones	UNII 1		UNII 2A		UNII 2C		UNII 3		
		Ch. 38	Ch. 46	Ch. 54	Ch. 62	Ch. 102	Ch. 118	Ch. 142	Ch. 151	Ch. 159
		Average								
0	26	10.86	10.92	10.83	10.94	10.83	10.68	10.61	10.60	10.76
8	26	10.56	10.65	10.92	10.95	10.65	10.79	10.98	10.67	10.84
17	26	10.46	10.64	10.78	10.95	10.86	10.86	10.54	10.65	10.86
37	52	12.68	12.87	12.76	12.51	12.72	12.89	12.68	12.91	12.85
41	52	12.55	12.78	12.70	12.71	12.88	12.82	12.58	12.89	12.79
44	52	12.83	12.99	12.68	12.77	12.95	12.78	12.69	12.89	12.89
53	106	14.76	14.53	14.52	14.54	14.50	14.53	14.89	14.83	14.54
55	106	14.88	14.75	14.73	14.73	14.66	14.59	14.90	14.66	14.62
56	106	14.87	14.6	14.52	14.51	14.68	14.38	14.72	14.86	14.44
61	242	12.73	16.73	16.48	13.91	14.72	16.65	16.86	16.97	16.65
62	242	12.67	16.72	16.64	13.81	14.99	16.78	16.81	16.99	16.81
65	484	12.47	16.43	16.81	13.43	14.50	16.43	16.56	16.59	16.94

5GHz - 80MHz							
RU Index	Tones	UNII 1	UNII 2A	UNII 2C		UNII 3	
		Ch. 42	Ch. 58	Ch. 106	Ch. 122	Ch. 138	Ch. 155
		Average	Average	Average	Average	Average	Average
0	26	10.50	10.80	10.97	10.98	10.61	10.71
18	26	10.60	10.61	10.93	10.86	10.97	10.93
36	26	10.60	10.95	10.78	10.94	10.49	10.96
37	52	12.63	12.42	12.75	12.52	12.58	12.68
44	52	12.64	12.65	12.98	12.74	12.74	12.61
52	52	12.85	12.66	12.68	12.42	12.52	12.72
53	106	14.74	14.58	14.81	14.77	14.72	14.79
57	106	14.74	14.64	14.64	14.86	14.95	14.61
60	106	14.98	14.81	14.79	14.55	14.59	14.76
61	242	11.77	12.13	12.23	15.99	15.88	15.89
63	242	11.50	12.20	12.48	15.57	15.74	15.71
64	242	11.79	12.17	12.45	15.48	15.84	15.49
65	484	11.85	12.15	11.96	15.78	15.94	15.65
66	484	11.95	12.29	12.07	15.96	15.96	15.66
67	996	11.85	12.23	12.14	15.63	15.59	15.92

FCC ID: A3LSMG970U	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 11/11/18 - 01/17/19	DUT Type: Portable Handset	APPENDIX H: Page 7 of 7		