

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 ($22 \pm 3^\circ\text{C}$ 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 $2.701 \text{ kJ/(kg}^\circ\text{K)}$

f [MHz]	Measured			Target		Diff.to Target [%]	
	e'	e''	sigma	eps	sigma	$\Delta\text{-eps}$	$\Delta\text{-sigma}$
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

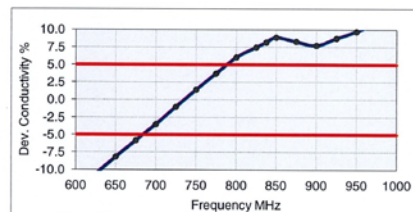
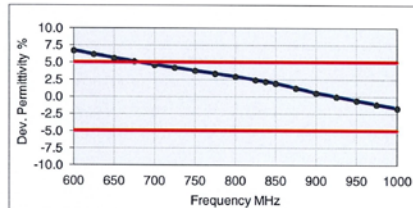


Figure D-3
750MHz Head Tissue Equivalent Matter

FCC ID: A3LSMG977KOR		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 02/01/19 – 03/07/19	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
CAS-No. 9005-64-5	< 50 %	polyoxyethylenesorbitan monolaurate

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.

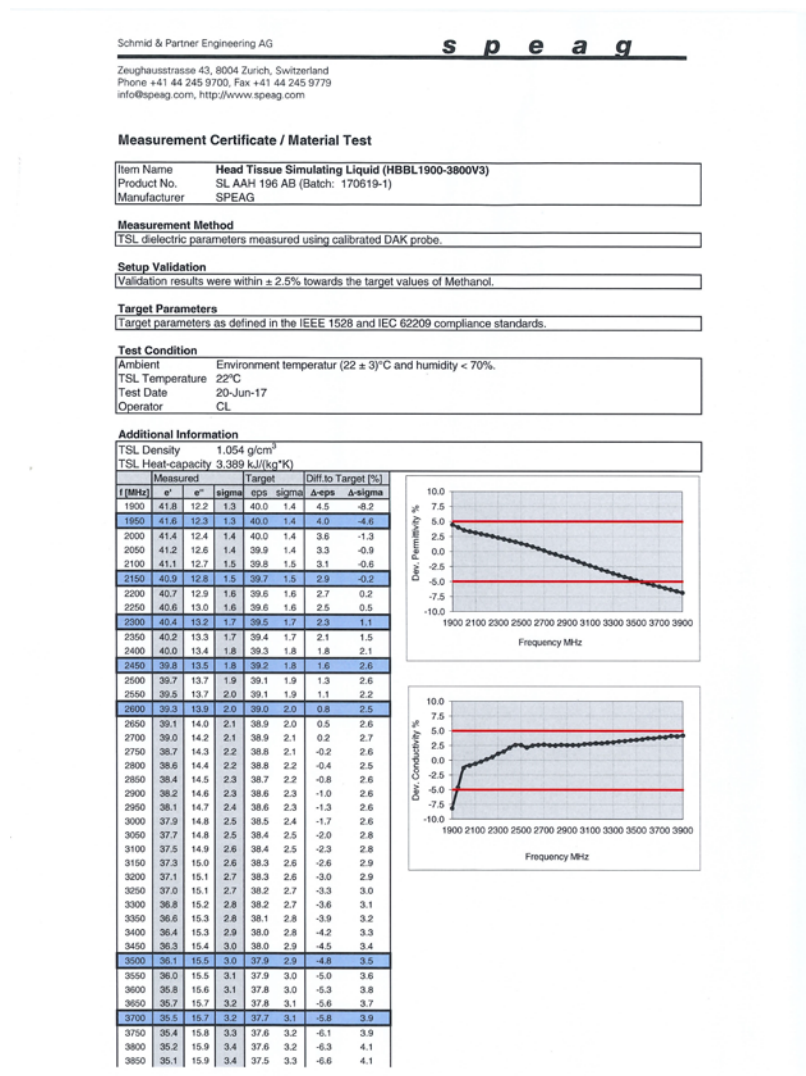


Figure D-5
2.4 GHz Head Tissue Equivalent Matter

FCC ID: A3LSMG977KOR		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 02/01/19 – 03/07/19	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.

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Measurement Certificate / Material Test

Item Name Head Tissue Simulating Liquid (HBBL3500-5800V5)
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 temperatur ($22 \pm 3^\circ\text{C}$ and humidity $< 70\%$).
TSL Temperature 22°C
Test Date 20-Jun-17
Operator CL

Additional Information

TSL Density 0.985 g/cm^3
TSL Heat-capacity $3.383 \text{ kJ/(kg}^\circ\text{K)}$

f [MHz]	Measured ϵ'	Measured ϵ''	Measured σ	Target ϵ'	Target ϵ''	Target σ	Diff to Target [%]
3400	38.6	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
5000	36.6	15.39	4.24	36.3	4.40	0.9	-3.6
5050	36.5	15.42	4.29	36.2	4.45	0.8	-3.6
5100	36.5	15.43	4.34	36.2	4.50	0.9	-3.6
5150	36.4	15.46	4.39	36.1	4.55	0.8	-3.6
5200	36.3	15.48	4.43	36.0	4.60	0.7	-3.8
5250	36.2	15.50	4.48	36.0	4.66	0.6	-3.8
5300	36.1	15.53	4.54	35.9	4.71	0.5	-3.5
5350	36.1	15.55	4.58	35.9	4.76	0.6	-3.7
5400	36.0	15.56	4.63	35.8	4.81	0.5	-3.7
5450	35.9	15.57	4.68	35.8	4.86	0.4	-3.7
5500	35.9	15.59	4.73	35.7	4.91	0.6	-3.7
5550	35.8	15.61	4.78	35.6	4.96	0.4	-3.7
5600	35.7	15.65	4.83	35.6	5.01	0.3	-3.7
5650	35.6	15.66	4.88	35.5	5.07	0.2	-3.7
5700	35.6	15.70	4.93	35.5	5.12	0.4	-3.6
5750	35.5	15.72	4.98	35.4	5.17	0.2	-3.6
5800	35.4	15.76	5.04	35.4	5.22	0.1	-3.4
5850	35.4	15.78	5.09	35.3	5.27	0.3	-3.4
5900	35.3	15.81	5.14	35.3	5.34	0.0	-3.7
5950	35.3	15.82	5.19	35.3	5.40	0.0	-3.9

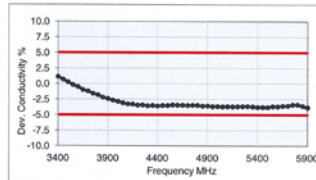
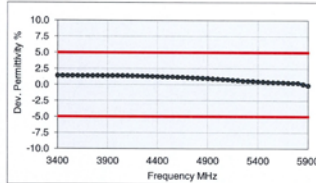


Figure D-7

3.5 – 5 GHz Head Tissue Equivalent Matter

FCC ID: A3LSMG977KOR		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 02/01/19 – 03/07/19	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.

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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 probe.

Setup Validation

Validation results were within $\pm 2.5\%$ 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)

Measured				Target		Diff.to Target [%]	
f [MHz]	ϵ'	ϵ''	sigma	eps	sigma	$\Delta\epsilon'$	$\Delta\epsilon''$
3400	50.7	16.46	3.11	51.5	3.20	-1.5	-2.7
3500	50.5	16.50	3.21	51.3	3.31	-1.6	-3.1
3600	50.4	16.56	3.32	51.2	3.43	-1.5	-3.2
3700	50.3	16.62	3.42	51.1	3.55	-1.5	-3.6
3800	50.2	16.72	3.53	50.9	3.66	-1.4	-3.7
3900	50.1	16.81	3.65	50.8	3.78	-1.3	-3.5
4000	49.9	16.93	3.77	50.6	3.90	-1.5	-3.3
4100	49.8	17.05	3.89	50.5	4.01	-1.4	-3.1
4200	49.6	17.18	4.01	50.4	4.13	-1.5	-2.9
4300	49.5	17.32	4.14	50.2	4.25	-1.5	-2.5
4400	49.3	17.46	4.27	50.1	4.37	-1.6	-2.2
4500	49.2	17.59	4.40	50.0	4.48	-1.5	-1.8
4600	49.0	17.73	4.54	49.8	4.60	-1.7	-1.3
4700	48.8	17.86	4.67	49.7	4.72	-1.8	-1.0
4800	48.6	17.99	4.80	49.6	4.83	-1.9	-0.7
4850	48.5	18.05	4.87	49.5	4.89	-2.0	-0.4
4900	48.4	18.11	4.94	49.4	4.95	-2.1	-0.2
4950	48.3	18.17	5.00	49.4	5.01	-2.1	-0.1
5000	48.2	18.23	5.07	49.3	5.07	-2.2	0.1
5050	48.1	18.29	5.14	49.2	5.12	-2.3	0.3
5100	48.0	18.34	5.20	49.2	5.18	-2.3	0.3
5150	47.9	18.39	5.27	49.1	5.24	-2.4	0.6
5200	47.9	18.45	5.34	49.0	5.30	-2.3	0.8
5250	47.8	18.50	5.40	48.9	5.36	-2.3	0.8
5300	47.7	18.56	5.47	48.9	5.42	-2.4	1.0
5350	47.6	18.61	5.54	48.8	5.47	-2.5	1.2
5400	47.5	18.67	5.61	48.7	5.53	-2.5	1.4
5450	47.4	18.72	5.68	48.7	5.59	-2.6	1.6
5500	47.3	18.77	5.74	48.6	5.65	-2.7	1.6
5550	47.2	18.83	5.81	48.5	5.71	-2.8	1.8
5600	47.1	18.88	5.88	48.5	5.77	-2.8	2.0
5650	47.1	18.93	5.95	48.4	5.82	-2.7	2.1
5700	47.0	18.99	6.02	48.3	5.88	-2.8	2.3
5750	46.9	19.04	6.09	48.3	5.94	-2.8	2.5
5800	46.8	19.10	6.16	48.2	6.00	-2.9	2.7
5850	46.7	19.16	6.23	48.1	6.06	-3.0	2.8
5900	46.6	19.22	6.31	48.1	6.12	-3.0	3.2

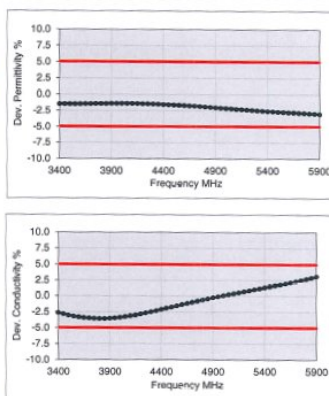


Figure D-9
3.5 – 5 GHz Body Tissue Equivalent Matter

FCC ID: A3LSMG977KOR		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 02/01/19 – 03/07/19	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. (ε _r)	CW VALIDATION			MOD. VALIDATION		
								SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
G	750	8/9/2018	7410	750	Head	0.898	41.769	PASS	PASS	PASS	N/A	N/A	N/A
G	835	8/9/2018	7410	835	Head	0.889	40.915	PASS	PASS	PASS	GMSK	PASS	N/A
H	1750	7/16/2018	7409	1750	Head	1.331	41.186	PASS	PASS	PASS	N/A	N/A	N/A
G	1900	8/9/2018	7410	1900	Head	1.429	38.607	PASS	PASS	PASS	GMSK	PASS	N/A
E	2450	2/5/2019	3589	2450	Head	1.825	39.836	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
G	2600	8/8/2018	7410	2600	Head	2.040	39.033	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
E	750	2/6/2019	3589	750	Body	0.984	54.096	PASS	PASS	PASS	N/A	N/A	N/A
D	835	8/15/2018	7357	835	Body	1.000	53.368	PASS	PASS	PASS	GMSK	PASS	N/A
G	1750	8/29/2018	7410	1750	Body	1.464	52.807	PASS	PASS	PASS	N/A	N/A	N/A
J	1900	2/8/2019	7488	1900	Body	1.571	52.538	PASS	PASS	PASS	GMSK	PASS	N/A
K	2450	4/3/2018	3319	2450	Body	2.043	51.130	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
K	2600	4/3/2018	3319	2600	Body	2.225	50.665	PASS	PASS	PASS	TDD	PASS	N/A
L	5250	10/29/2018	7308	5250	Body	5.511	48.770	PASS	PASS	PASS	OFDM	N/A	PASS
L	5600	10/29/2018	7308	5600	Body	5.994	48.200	PASS	PASS	PASS	OFDM	N/A	PASS
L	5750	10/29/2018	7308	5750	Body	6.219	47.960	PASS	PASS	PASS	OFDM	N/A	PASS

Table E-2
SAR System Validation Summary – 10g

SAR System	Freq.(MHz)	Date	Probe SN	Probe Cal Point		Cond.(σ)	Perm.(ε _r)	CW VALIDATION			MOD. VALIDATION		
								SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD.TYPE	DUTYFACTOR	PAR
D	835	8/15/2018	7357	835	Body	1.000	53.368	PASS	PASS	PASS	GMSK	PASS	N/A
G	1750	8/29/2018	7410	1750	Body	1.464	52.807	PASS	PASS	PASS	N/A	N/A	N/A
J	1900	2/8/2019	7488	1900	Body	1.571	52.538	PASS	PASS	PASS	GMSK	PASS	N/A
K	2450	4/3/2018	3319	2450	Body	2.043	51.130	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
K	2600	4/3/2018	3319	2600	Body	2.225	50.665	PASS	PASS	PASS	TDD	PASS	N/A
L	5250	10/29/2018	7308	5250	Body	5.511	48.770	PASS	PASS	PASS	OFDM	N/A	PASS
L	5600	10/29/2018	7308	5600	Body	5.994	48.200	PASS	PASS	PASS	OFDM	N/A	PASS
L	5750	10/29/2018	7308	5750	Body	6.219	47.960	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: A3LSMG977KOR		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 02/01/19 – 03/07/19	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.

G.2 Distance Verification Procedure

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.
2. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02 and FCC Guidance. Each applicable test position was evaluated. The distances were confirmed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
3. Steps 1 and 2 were repeated for low, mid, and high bands, as appropriate (see note below Table G-2 for more details).
4. Steps 1 through 3 were repeated for all distance-based power reduction mechanisms.

FCC ID: A3LSMG977KOR	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 02/01/19 – 03/07/19	DUT Type: Portable Handset			APPENDIX G: Page 1 of 3

G.3 Main Antenna Verification Summary

Table G-1
Power Measurement Verification for Main Antenna

Mechanism(s)		Mode/Band	Conducted Power (dBm)		
1st	2nd		Un-triggered (Max)	Mechanism #1 (Reduced)	Mechanism #2 (Reduced)
Grip		UMTS 850	23.6	20.58	
Hotspot On		UMTS 1750	22.78	19.77	
Hotspot On	Grip	UMTS 1750	22.76	19.69	19.68
Grip		UMTS 1750	22.77	19.81	
Grip	Hotspot On	UMTS 1750	22.78	19.82	19.82
Hotspot On		UMTS 1900	22.6	19.59	
Hotspot On	Grip	UMTS 1900	22.61	19.58	19.57
Grip		UMTS 1900	22.59	19.61	
Grip	Hotspot On	UMTS 1900	22.62	19.59	19.61
Hotspot On		LTE FDD Band 66	23.22	20.32	
Hotspot On	Grip	LTE FDD Band 66	23.2	20.38	20.24
Grip		LTE FDD Band 66	23.21	20.21	
Grip	Hotspot On	LTE FDD Band 66	23.22	20.25	20.22
Hotspot On		LTE FDD Band 4	23.09	20.08	
Hotspot On	Grip	LTE FDD Band 4	23.09	20.11	20.23
Grip		LTE FDD Band 4	23.11	20.08	
Grip	Hotspot On	LTE FDD Band 4	23.1	20.09	20.1
Hotspot On		LTE FDD Band 25	23.34	20.33	
Hotspot On	Grip	LTE FDD Band 25	23.31	20.37	20.36
Grip		LTE FDD Band 25	23.33	20.31	
Grip	Hotspot On	LTE FDD Band 25	23.34	20.33	20.32
Hotspot On		LTE FDD Band 2	23.3	20.31	
Hotspot On	Grip	LTE FDD Band 2	23.29	20.29	20.28
Grip		LTE FDD Band 2	23.28	20.27	
Grip	Hotspot On	LTE FDD Band 2	23.29	20.32	20.33
Hotspot On		LTE TDD Band 41	22.96	20.55	
Hotspot On	Grip	LTE TDD Band 41	22.97	20.56	20.56
Grip		LTE TDD Band 41	23.03	20.59	
Grip	Hotspot On	LTE TDD Band 41	23.01	20.58	20.58

Table G-2
Distance Measurement Verification for Main Antenna

Test Condition	Band	Distance Measurements (mm)		Minimum Distance per Manufacturer (mm)
		Moving Toward	Moving Away	
Body - Back Side	Low	10	12	8
Body - Back Side	Mid	10	12	8
Body - Back Side	High	10	12	8
Body - Front Side	Low	9	11	6
Body - Front Side	Mid	9	11	6
Body - Front Side	High	9	11	6
Body - Bottom Edge	Low	12	14	12
Body - Bottom Edge	Mid	12	14	12
Body - Bottom Edge	High	12	14	12

*Note: Low Band refers to: UMTS B5, Mid band refers to: UMTS B2/4, LTE B2/4/25/66; High band refers to: LTE B41

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G.4 WIFI Verification Summary

Table G-3
Power Measurement Verification WIFI

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
1st		Un-triggered (Max)	Mechanism #1 (Reduced)
Held-to-Ear	802.11b	17.91	15.83
Held-to-Ear	802.11g	15.73	15.16
Held-to-Ear	802.11n (2.4GHz)	15.93	15.30
Held-to-Ear	802.11a	16.29	13.39
Held-to-Ear	802.11n (5GHz, 20MHz BW)	16.58	13.99
Held-to-Ear	802.11ac (20MHz BW)	16.81	14.02
Held-to-Ear	802.11n (5GHz, 40MHz BW)	15.02	13.30
Held-to-Ear	802.11ac (40MHz BW)	15.99	13.87
Held-to-Ear	802.11ac (80MHz BW)	14.09	13.04

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APPENDIX H: 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

Tone / Band		Modulated Average - Single Tx Chain (dBm)					Tone / Band		Modulated Average - MIMO (dBm)				
		1	2 - 10	11	12	13			20 MHz Bandwidth				
Channel							Channel		1	2 - 10	11	12	13
26T (2.4 GHz)	Maximum	15.0	17.0	15.0	8.0	1.5	26T (2.4 GHz)	Maximum	17.0	11.0	4.5		
	Nominal	14.0	16.0	14.0	7.0	0.5		Nominal	16.0	10.0	3.5		
52T (2.4 GHz)	Maximum	17.0		8.0	1.5		52T (2.4 GHz)	Maximum	17.0	11.0	4.5		
	Nominal	16.0		7.0	0.5			Nominal	16.0	10.0	3.5		
106T (2.4 GHz)	Maximum	17.0		8.0	1.5		106T (2.4 GHz)	Maximum	17.0	11.0	4.5		
	Nominal	16.0		7.0	0.5			Nominal	16.0	10.0	3.5		
242T (2.4 GHz)	Maximum	15.0	17.0	13.5	8.0	1.5	242T (2.4 GHz)	Maximum	17.0	16.5	11.0	4.5	
	Nominal	14.0	16.0	12.5	7.0	0.5		Nominal	16.0	15.5	10.0	3.5	

Tone / Band		Modulated Average - Single Tx Chain (dBm)													
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth					
	Channel	36-48	52-64	100-144	149-165	38	46	54	62	102-142	151-159	42	58	106-138	155
26T (5 GHz)	Maximum	11.5	11.0	11.0	15.0	11.5	46	54	62	102-142	151-159	11.0	12.0	11.0	15.0
	Nominal	10.5	10.0	10.0	14.0	10.5	10.0	10.0	14.0	10.0	11.0	10.0	14.0		
52T (5 GHz)	Maximum	13.5	13.0	13.5	18.0	13.0	13.5	13.5	17.0	13.5	14.0	14.0	16.0		
	Nominal	12.5	12.0	12.5	17.0	12.0	12.5	12.5	16.0	12.5	13.0	13.0	15.0		
106T (5 GHz)	Maximum	15.5	16.0	17.0	18.0	16.5	16.0	16.0	17.0	16.0	16.0	16.0	16.0		
	Nominal	14.5	15.0	16.0	17.0	15.5	15.0	15.0	16.0	15.0	15.0	15.0	15.0		
242T (5 GHz)	Maximum	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0	17.0	16.0	16.0	16.0	16.0	
	Nominal	17.0	17.0	17.0	17.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0	15.0	15.0	
484T (5 GHz)	Maximum					14.0	17.0	16.5	15.0	17.0	17.0	14.5	14.5	16.0	16.0
	Nominal					13.0	16.0	15.5	14.0	16.0	16.0	13.5	13.5	15.0	15.0
996T (5 GHz)	Maximum											14.5	14.5	16.0	16.0
	Nominal											13.5	13.5	15.0	15.0

Tone / Band		Modulated Average - MIMO (dBm)													
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth					
	Channel	36-48	52-64	100-144	149-165	38-46	54-62	102-142	151-159	42	58	106-138	155		
26T (5 GHz)	Maximum	11.5	11.0	11.0	15.0	11.5	11.0	11.0	15.0	11.0	12.0	11.0	15.0		
	Nominal	10.5	10.0	10.0	14.0	10.5	10.0	10.0	14.0	10.0	11.0	10.0	14.0		
52T (5 GHz)	Maximum	13.5	13.0	13.5	18.0	13.0	13.5	13.5	17.0	13.5	14.0	14.0	16.0		
	Nominal	12.5	12.0	12.5	17.0	12.0	12.5	12.5	16.0	12.5	13.0	13.0	15.0		
106T (5 GHz)	Maximum	15.5	16.0	17.0	18.0	16.5	16.0	16.0	17.0	16.0	16.0	16.0	16.0		
	Nominal	14.5	15.0	16.0	17.0	15.5	15.0	15.0	16.0	15.0	15.0	15.0	15.0		
242T (5 GHz)	Maximum	18.0	18.0	18.0	18.0	17.0	17.0	17.0	17.0	17.0	16.0	16.0	16.0	16.0	
	Nominal	17.0	17.0	17.0	17.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0	15.0	15.0	
484T (5 GHz)	Maximum					17.0	16.5	17.0	17.0	14.5	14.5	16.0	16.0		
	Nominal					16.0	15.5	16.0	16.0	13.5	13.5	15.0	15.0		
996T (5 GHz)	Maximum											14.5	14.5	16.0	16.0
	Nominal											13.5	13.5	15.0	15.0

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1.2.2 Reduced 802.11ax RU WLAN Output Power

Tone / Band		Modulated Average - Single Tx Chain (dBm)						Tone / Band		Modulated Average - MIMO (dBm)					
										20 MHz Bandwidth					
	Channel	1	2 - 10	11	12	13		Channel	1	2 - 10	11	12	13		
26T (2.4 GHz)	Maximum	15.0	16.0	15.0	8.0	1.5	26T (2.4 GHz)	Maximum	16.0		11.0	4.5			
	Nominal	14.0	15.0	14.0	7.0	0.5		Nominal	15.0		10.0	3.5			
52T (2.4 GHz)	Maximum		16.0		8.0	1.5	52T (2.4 GHz)	Maximum	16.0		11.0	4.5			
	Nominal		15.0		7.0	0.5		Nominal	15.0		10.0	3.5			
106T (2.4 GHz)	Maximum		16.0		8.0	1.5	106T (2.4 GHz)	Maximum	16.0		11.0	4.5			
	Nominal		15.0		7.0	0.5		Nominal	15.0		10.0	3.5			
242T (2.4 GHz)	Maximum	15.0	16.0	13.5	8.0	1.5	242T (2.4 GHz)	Maximum	16.0		11.0	4.5			
	Nominal	14.0	15.0	12.5	7.0	0.5		Nominal	15.0		10.0	3.5			

Tone / Band		Modulated Average - Single Tx Chain (dBm)											
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth			
	Channel	36-48	52-64	100-144	149-165	38-46	54-62	102-142	151-159	42	58	106-138	155
26T (5 GHz)	Maximum	11.5	11.0	11.0	14.0	11.5	11.0	11.0	14.0	11.0	12.0	11.0	14.0
	Nominal	10.5	10.0	10.0	13.0	10.5	10.0	10.0	13.0	10.0	11.0	10.0	13.0
52T (5 GHz)	Maximum	13.5	13.0	13.5	14.0	13.0	13.5	13.5	14.0	13.5	14.0	14.0	14.0
	Nominal	12.5	12.0	12.5	13.0	12.0	12.5	12.5	13.0	12.5	13.0	13.0	13.0
106T (5 GHz)	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Nominal	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
242T (5 GHz)	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Nominal	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
484T (5 GHz)	Maximum					14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Nominal					13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
996T (5 GHz)	Maximum									14.0	14.0	14.0	14.0
	Nominal									13.0	13.0	13.0	13.0

Tone / Band		Modulated Average - MIMO (dBm)											
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth			
	Channel	36-48	52-64	100-144	149-165	38-46	54-62	102-142	151-159	42	58	106-138	155
26T (5 GHz)	Maximum	11.5	11.0	11.0	15.0	11.5	11.0	11.0	15.0	11.0	12.0	11.0	15.0
	Nominal	10.5	10.0	10.0	14.0	10.5	10.0	10.0	14.0	10.0	11.0	10.0	14.0
52T (5 GHz)	Maximum	13.5	13.0	13.5	17.0	13.0	13.5	13.5	17.0	13.5	14.0	14.0	16.0
	Nominal	12.5	12.0	12.5	16.0	12.0	12.5	12.5	16.0	12.5	13.0	13.0	15.0
106T (5 GHz)	Maximum	15.5	16.0	17.0	17.0	16.5	16.0	16.0	17.0	16.0	16.0	16.0	16.0
	Nominal	14.5	15.0	16.0	16.0	15.5	15.0	15.0	16.0	15.0	15.0	15.0	15.0
242T (5 GHz)	Maximum	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.0	16.0	16.0	16.0
	Nominal	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0	15.0	15.0
484T (5 GHz)	Maximum					17.0	16.5	17.0	17.0	14.5	14.5	16.0	16.0
	Nominal					16.0	15.5	16.0	16.0	13.5	13.5	15.0	15.0
996T (5 GHz)	Maximum									14.5	14.5	16.0	16.0
	Nominal									13.5	13.5	15.0	15.0

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

Tone / Band		Modulated Average - Single Tx Chain (dBm)						Tone / Band		Modulated Average - MIMO (dBm)					
										20 MHz Bandwidth					
26T (2.4 GHz)	Channel	1	2 - 10	11	12	13		26T (2.4 GHz)	Channel	1	2 - 10	11	12	13	
	Maximum	15.0	17.0	15.0	8.0	1.5			Maximum	17.0			11.0	4.5	
52T (2.4 GHz)	Nominal	14.0	16.0	14.0	7.0	0.5		52T (2.4 GHz)	Nominal	16.0			10.0	3.5	
	Maximum	17.0			8.0	1.5			Maximum	17.0			11.0	4.5	
106T (2.4 GHz)	Nominal	16.0			7.0	0.5		106T (2.4 GHz)	Nominal	16.0			10.0	3.5	
	Maximum	17.0			8.0	1.5			Maximum	17.0			11.0	4.5	
242T (2.4 GHz)	Nominal	16.0			7.0	0.5		242T (2.4 GHz)	Nominal	16.0			10.0	3.5	
	Maximum	15.0	17.0	13.5	8.0	1.5			Maximum	17.0	16.5		11.0	4.5	
	Nominal	14.0	16.0	12.5	7.0	0.5			Nominal	16.0	15.5		10.0	3.5	

Tone / Band		Modulated Average - Single Tx Chain (dBm)											
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth			
26T (5 GHz)	Channel	36-48	52-64	100-144	149-165	38-46	54-62	102-142	151-159	42	58	106-138	155
	Maximum	11.5	11.0	11.0	14.0	11.5	11.0	11.0	14.0	11.0	12.0	11.0	14.0
52T (5 GHz)	Nominal	10.5	10.0	10.0	13.0	10.5	10.0	10.0	13.0	10.0	11.0	10.0	13.0
	Maximum	13.5	13.0	13.5	14.0	13.0	13.5	13.5	14.0	13.5	14.0	14.0	14.0
106T (5 GHz)	Nominal	12.5	12.0	12.5	13.0	12.0	12.5	12.5	13.0	12.5	13.0	13.0	13.0
	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
242T (5 GHz)	Nominal	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
484T (5 GHz)	Nominal	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
996T (5 GHz)	Nominal	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Tone / Band		Modulated Average - MIMO (dBm)											
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth			
26T (5 GHz)	Channel	36-48	52-64	100-144	149-165	38-46	54-62	102-142	151-159	42	58	106-138	155
	Maximum	11.5	11.0	11.0	15.0	11.5	11.0	11.0	15.0	11.0	12.0	11.0	15.0
52T (5 GHz)	Nominal	10.5	10.0	10.0	14.0	10.5	10.0	10.0	14.0	10.0	11.0	10.0	14.0
	Maximum	13.5	13.0	13.5	17.0	13.0	13.5	13.5	17.0	13.5	14.0	14.0	16.0
106T (5 GHz)	Nominal	12.5	12.0	12.5	16.0	12.0	12.5	12.5	16.0	12.5	13.0	13.0	15.0
	Maximum	15.5	16.0	17.0	17.0	16.5	16.0	16.0	17.0	16.0	16.0	16.0	16.0
242T (5 GHz)	Nominal	14.5	15.0	16.0	16.0	15.5	15.0	15.0	16.0	15.0	15.0	15.0	15.0
	Maximum	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.0	16.0	16.0	16.0
484T (5 GHz)	Nominal	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0	15.0	15.0
	Maximum	17.0	17.0	17.0	17.0	17.0	16.5	17.0	17.0	14.5	14.5	16.0	16.0
996T (5 GHz)	Nominal	16.0	16.0	16.0	16.0	16.0	15.5	16.0	16.0	13.5	13.5	15.0	15.0
	Maximum	17.0	17.0	17.0	17.0	17.0	16.0	16.0	16.0	14.5	14.5	16.0	16.0

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

Tone / Band		Modulated Average - Single Tx Chain (dBm)						Tone / Band		Modulated Average - MIMO (dBm)					
										20 MHz Bandwidth					
	Channel	1	2 - 10	11	12	13		Channel	1	2 - 10	11	12	13		
26T (2.4 GHz)	Maximum	14.0			8.0		26T (2.4 GHz)	Maximum	14.0			11.0			
	Nominal	13.0			7.0			Nominal	13.0			10.0			
52T (2.4 GHz)	Maximum	14.0			8.0		52T (2.4 GHz)	Maximum	14.0			11.0			
	Nominal	13.0			7.0			Nominal	13.0			10.0			
106T (2.4 GHz)	Maximum	14.0			8.0		106T (2.4 GHz)	Maximum	14.0			11.0			
	Nominal	13.0			7.0			Nominal	13.0			10.0			
242T (2.4 GHz)	Maximum	14.0	13.5		8.0		242T (2.4 GHz)	Maximum	14.0	11.0		4.5			
	Nominal	13.0	12.5		7.0			Nominal	13.0	10.0		3.5			

Tone / Band		Modulated Average - Single Tx Chain (dBm)											
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth			
	Channel	36-48	52-64	100-144	149-165	38-46	54-62	102-142	151-159	42	58	106-138	155
26T (5 GHz)	Maximum	11.5	11.0	11.0	14.0	11.5	11.0	11.0	14.0	11.0	12.0	11.0	14.0
	Nominal	10.5	10.0	10.0	13.0	10.5	10.0	10.0	13.0	10.0	11.0	10.0	13.0
52T (5 GHz)	Maximum	13.5	13.0	13.5	14.0	13.0	13.5	13.5	14.0	13.5	14.0	14.0	14.0
	Nominal	12.5	12.0	12.5	13.0	12.0	12.5	12.5	13.0	12.5	13.0	13.0	13.0
106T (5 GHz)	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Nominal	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
242T (5 GHz)	Maximum	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Nominal	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
484T (5 GHz)	Maximum					14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
	Nominal					13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
996T (5 GHz)	Maximum									14.0	14.0	14.0	14.0
	Nominal									13.0	13.0	13.0	13.0

Tone / Band		Modulated Average - MIMO (dBm)											
		20 MHz Bandwidth				40 MHz Bandwidth				80 MHz Bandwidth			
	Channel	36-48	52-64	100-144	149-165	38-46	54-62	102-142	151-159	42	58	106-138	155
26T (5 GHz)	Maximum	11.5	11.0	11.0	15.0	11.5	11.0	11.0	15.0	11.0	12.0	11.0	15.0
	Nominal	10.5	10.0	10.0	14.0	10.5	10.0	10.0	14.0	10.0	11.0	10.0	14.0
52T (5 GHz)	Maximum	13.5	13.0	13.5	17.0	13.0	13.5	13.5	17.0	13.5	14.0	14.0	16.0
	Nominal	12.5	12.0	12.5	16.0	12.0	12.5	12.5	16.0	12.5	13.0	13.0	15.0
106T (5 GHz)	Maximum	15.5	16.0	17.0	17.0	16.5	16.0	16.0	17.0	16.0	16.0	16.0	16.0
	Nominal	14.5	15.0	16.0	16.0	15.5	15.0	15.0	16.0	15.0	15.0	15.0	15.0
242T (5 GHz)	Maximum	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	16.0	16.0	16.0	16.0
	Nominal	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.0	15.0	15.0	15.0
484T (5 GHz)	Maximum					17.0	16.5	17.0	17.0	14.5	14.5	16.0	16.0
	Nominal					16.0	15.5	16.0	16.0	13.5	13.5	15.0	15.0
996T (5 GHz)	Maximum									14.5	14.5	16.0	16.0
	Nominal									13.5	13.5	15.0	15.0

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1.3 IEEE 802.11ax Measured Powers

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

2.4GHz - 20MHz						
RU Index	Tonnes	Ch. 1	Ch. 2	Ch. 6	Ch. 10	Ch. 11
		Average	Average	Average	Average	Average
0	26	14.98	16.91	16.62	16.92	14.45
4	26	14.93	16.82	16.91	16.70	14.85
8	26	14.85	16.88	16.62	16.98	14.65
37	52	16.96		16.79		16.62
38	52	16.49		16.80		16.68
40	52	16.65		16.57		16.50
53	106	16.62		16.42		16.73
54	106	16.75		16.60		16.79
61	242	14.98	16.56	16.56	16.62	13.48

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

2.4GHz - 20MHz						
RU Index	Tonnes	Ch. 1	Ch. 2	Ch. 6	Ch. 10	Ch. 11
		Average	Average	Average	Average	Average
0	26	14.46	16.53	16.57	16.98	14.98
4	26	14.60	16.80	16.37	16.53	14.54
8	26	14.44	16.47	16.57	16.50	14.98
37	52	16.50		16.64		16.60
38	52	16.59		16.74		16.91
40	52	16.59		16.94		16.82
53	106	16.75		16.95		16.60
54	106	16.92		16.98		16.86
61	242	14.80	16.46	16.89	16.72	13.27

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

5GHz - 20MHz													
RU Index	Tonnes	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	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average
0	26	11.37	11.49	11.06	10.50	10.54	10.71	10.58	10.57	10.96	14.53	14.97	14.84
4	26	10.97	10.99	11.26	10.50	10.69	10.68	10.56	10.60	10.40	14.60	14.54	14.92
8	26	11.37	11.32	11.46	10.89	10.96	10.37	10.78	10.72	10.79	14.82	14.80	14.65
37	52	13.14	13.18	13.25	12.93	12.99	12.52	13.22	13.31	13.15	17.88	17.79	17.54
38	52	13.17	13.12	13.33	12.99	12.54	12.59	13.29	13.39	13.21	17.96	17.91	17.77
40	52	13.05	13.01	13.22	12.74	12.83	12.83	12.96	13.02	13.32	17.62	17.58	17.50
53	106	15.44	15.05	15.07	15.79	15.90	15.99	16.67	16.70	16.59	17.86	17.81	17.71
54	106	15.40	15.36	15.06	15.62	15.79	15.81	16.51	16.53	16.79	17.73	17.73	17.55
61	242	17.61	17.56	17.67	17.51	17.64	17.64	17.93	17.98	17.76	17.84	17.75	17.57

5GHz - 40MHz											
RU Index	Tonnes	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	Average	Average	Average	Average	Average	Average	Average	Average	
0	26	11.40	11.33	10.94	10.70	10.34	10.47	10.97	14.84	14.98	
8	26	11.12	11.22	10.37	10.55	10.49	10.44	10.56	14.68	14.66	
17	26	10.99	11.23	10.66	10.79	10.82	10.66	10.65	14.71	14.77	
37	52	12.68	12.62	13.26	13.06	13.23	13.21	13.11	16.55	16.71	
40	52	12.87	12.85	13.40	13.09	13.25	13.22	13.22	16.76	16.71	
44	52	12.51	12.63	13.05	13.15	13.04	13.16	13.47	16.51	16.51	
53	106	16.10	16.11	15.73	15.99	15.86	15.90	15.88	16.78	16.90	
54	106	16.07	16.22	15.69	15.92	15.70	15.68	15.73	16.71	16.76	
56	106	16.41	16.08	15.67	15.73	15.76	15.58	15.73	16.66	16.74	
61	242	16.73	16.83	16.85	16.66	16.96	16.83	16.85	16.90	16.70	
62	242	16.67	16.81	16.91	16.56	16.60	16.49	16.94	16.93	16.80	
65	484	13.52	16.59	16.21	13.98	16.72	16.71	16.72	16.64	16.96	

5GHz - 80MHz							
RU Index	Tonnes	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	10.97	10.53	10.50	10.64	10.60	14.50
17	26	10.75	10.96	10.77	10.75	10.75	14.81
36	26	10.83	10.54	10.85	10.82	10.68	14.72
37	52	13.27	13.38	13.80	13.86	13.72	15.55
44	52	13.48	13.19	13.92	13.82	13.89	15.71
52	52	13.10	13.23	13.51	13.52	13.87	15.82
53	106	15.69	15.83	15.84	15.85	15.80	15.61
56	106	15.91	15.95	15.99	15.90	15.91	15.81
60	106	15.60	15.74	15.71	15.58	15.52	15.51
61	242	15.97	15.99	15.97	15.96	15.99	15.80
62	242	15.82	15.98	15.82	15.73	15.71	15.66
64	242	15.93	15.63	15.57	15.50	15.52	15.76
65	484	14.13	14.35	15.57	15.63	15.53	15.97
66	484	14.30	14.40	15.66	15.56	15.61	15.99
67	996	14.16	14.25	15.62	15.51	15.95	15.83

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

5GHz - 20MHz													
RU Index	Tonnes	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	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average
0	26	11.31	11.41	11.39	10.76	10.70	10.70	10.57	10.59	10.54	14.65	14.85	14.71
4	26	11.12	11.49	11.11	10.98	10.99	10.79	10.53	10.63	10.69	14.69	14.83	14.94
8	26	11.45	11.27	11.44	10.79	10.64	10.61	10.94	10.96	10.97	14.91	14.78	14.60
37	52	13.20	13.07	13.20	12.65	12.57	12.62	13.08	13.10	13.44	17.67	17.91	17.76
38	52	13.28	13.20	13.27	12.79	12.64	12.71	13.07	13.20	13.41	17.65	17.70	17.96
40	52	13.20	13.10	13.16	12.53	12.51	12.54	13.16	13.20	13.27	17.91	17.93	17.63
53	106	15.36	15.32	15.39	15.92	15.84	15.92	16.54	16.70	16.63	17.63	17.96	17.78
54	106	15.44	15.34	15.39	15.83	15.81	15.84	16.88	16.55	16.51	17.55	17.99	17.74
61	242	17.86	17.84	17.80	17.89	17.93	17.89	17.51	17.58	17.58	17.58	17.97	17.73

5GHz - 40MHz											
RU Index	Tonnes	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	Average	Average	Average	Average	Average	Average	Average	Average	
0	26	10.85	11.41	10.85	10.83	10.56	10.53	10.65	14.64	14.57	
8	26	11.22	11.21	10.99	10.94	10.60	10.57	10.83	14.83	14.92	
17	26	11.38	11.39	10.56	10.51	10.52	10.88	10.96	14.57	14.52	
37	52	12.65	12.68	13.31	13.34	12.91	12.86	12.93	16.80	16.50	
40	52	12.60	12.55	13.36	13.40	13.12	13.09	13.18	16.97	16.99	
44	52	12.64	12.53	13.01	13.01	13.49	13.43	13.47	16.68	16.84	
53	106	16.14	16.04	15.53	15.58	15.84	15.72	15.85	16.94	16.61	
54	106	16.22	16.14	15.64	15.68	15.60	15.63	15.64	16.94	16.96	
56	106	16.02	16.01	15.95	15.91	15.80	15.60	15.74	16.95	16.68	
61	242	16.86	16.77	16.86	16.87	16.87	16.87	16.97	16.64	16.99	
62	242	16.72	16.76	16.77	16.67	16.60	16.50	16.53	16.76	16.54	
65	484	13.67	16.99	16.37	14.99	16.71	16.57	16.67	16.87	16.79	

5GHz - 80MHz							
RU Index	Tonnes	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	10.55	11.53	10.75	10.74	10.85	14.71
17	26	10.89	11.81	10.85	10.89	10.90	14.58
36	26	10.85	11.65	10.84	10.81	10.98	14.60
37	52	13.40	13.79	13.75	13.68	13.86	15.79
44	52	13.23	13.56	13.90	13.77	13.82	15.99
52	52	13.25	13.52	13.53	13.55	13.57	15.71
53	106	15.62	15.55	15.77	15.81	15.97	15.90
56	106	15.50	15.67	15.92	15.84	15.84	15.55
60	106	15.55	15.84	15.51	15.53	15.65	15.89
61	242	15.97	15.71	15.91	15.90	15.91	15.55
62	242	15.98	15.79	15.66	15.62	15.63	15.97
64	242	15.72	15.61	15.96	15.93	15.99	15.74
65	484	14.35	14.30	15.99	15.50	15.53	15.65
66	484	14.39	14.22	15.56	15.53	15.61	15.67
67	996	14.23	14.32	15.97	15.90	15.98	15.54

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